

THE  
**MEDICAL JOURNAL**  
**OF AUSTRALIA**

DEC 27 1917  
UNIV. OF MICH.

(With which "The Australasian Medical Gazette," and "The Australian Medical Journal" are incorporated.)

The Journal of the Australian Branches of the British Medical Association.

VOL. II, FIFTH YEAR—No. 20.

SYDNEY: SATURDAY, NOVEMBER 17, 1917.

PRICE 6d.

**Allen & Hanburys Ltd.**

MAKERS OF

**SURGICAL INSTRUMENTS**

SUPPLIERS TO

**H.M. ARMY and H.M. NAVY**

ALL INSTRUMENTS ARE OF THE

**BEST BRITISH WORKMANSHIP**

AUSTRALASIAN BRANCH:

**B.M.A. BUILDING, ELIZABETH STREET, SYDNEY**



## This Dust-Coat Possesses Style

as well as Suitability and  
:: Capacity for Service ::

The Exceptional Cutting and Careful Workmanship put into this Coat give it a degree of Smartness not usually associated with this Class of Garment, though nothing has been lost in the direction of Comfort. The Materials provided are perfectly Suited to Hot Weather Wear.

The Coat is Double-Breasted and features the Regulation Turn-down Collar; provided and perfectly suited to Hot Wind-guards at Cuffs; with Flap Pockets. Buttons are Detachable. We quote it in

Tussorette, 27/6; Mercerised Linen, 30/  
Similar Coats are obtainable in  
Crash, 15/6; Khaki Drill, 17/6;  
Poplinette, 19/6; White Drill, 22/6.

Call or Write. — We Pay Freight.

**LINCOLN, STUART & CO. PTY. LTD.**

"MOTOR-WEAR SPECIALISTS," MELBOURNE

## HORLICK'S MALTED MILK

(BARLEY, WHEAT and MILK in Powder Form.)

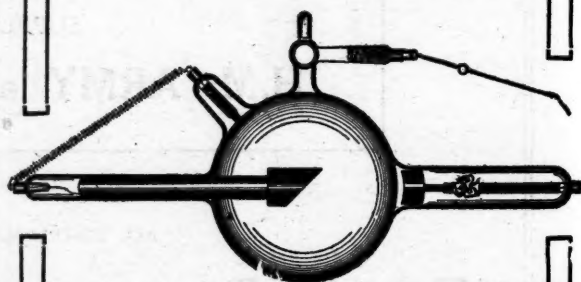
is the first thought of experienced Dietitians when selecting a palatable, nourishing, easily assimilated food for the aged and infirm, for nursing mothers, for convalescents, and neurasthenics. The wholesome, invigorating food principles of pure milk and choice malted grain are so prepared in vacuo as to be properly assimilated in the feeblest conditions. Used more extensively every year in the feeding of infants, and as a supplementary nutrient for growing children, because it brings about desired results.

PREPARED IN A MOMENT WITH WATER;  
NO COOKING.

**HORLICK'S MALTED MILK COMPANY,**  
SLOUGH, BUCKS, ENGLAND

Agents: HUTCHINSON & CO., Ltd., 26 Jamieson St., Sydney, N.S.W.

## X-RAY TUBES



We are agents for the celebrated Macalaster Wiggin Tubes made with very solid Tungsten or Platinum targets for heavy Currents

Stock of all patterns generally on hand  
PRICE LIST on APPLICATION

Every Requisite for X-Ray and Electro-Therapeutic Work

**W. WATSON & Sons, Pty., Ltd.**

(X-Ray Apparatus Providers)

OCEAN HOUSE, MOORE St., SYDNEY  
and 78 Swanston Street, MELBOURNE

# THE MEDICAL JOURNAL OF AUSTRALIA.

VOL. II.—4TH YEAR.

SYDNEY: SATURDAY, NOVEMBER 17, 1917.

No. 20.

## THE REPAIR OF SKULL DEFECTS.

By R. C. Brown, F.R.C.S. (Eng.),

Surgeon to In-patients, Alfred Hospital, Melbourne; Surgeon to Caulfield Military Hospital.

The unprecedented conditions of the world war have been productive of an enormous number of head injuries, the direct and indirect sequelæ of which have created a special class of surgical cases due to a permanent opening in the skull.

The mere fact of the existence of a physical gap in the otherwise rigid cranium appears to cause a group of important symptoms quite apart from those due to pathological changes in the brain and meninges. That this is so is in great part proved by the undoubted relief or complete cure of these symptoms when the skull defect is restored. Also, when one considers the subject, there would be cause for wonder if there were no untoward manifestations of the altered physical surroundings of the brain substance.

The brain is responsive to every pulsation of the heart, to every alteration in blood tension and to every respiration; it contains comparatively great and numerous spaces filled with a fluid medium directly continuous with others in the spinal column. The sudden appearance of a large gap in a previously rigid encasing must upset the equilibrium of so delicate a machine. It would indeed be strange if the patient had no unpleasant reminders of his altered condition. Yet it is a curious fact that surgeons do not appear to have paid particular attention to the subject before the war, though all must occasionally have met with cases needing relief.

The symptoms complained of in my experience, which have been relieved by operation, have been in order of frequency:—

- (1) Dizziness coming on in "attacks" and especially on stooping, heavy exertion or pressure on the part. One patient complained that he could not wear his hat, till after the operation, owing to this symptom.
- (2) Fear of pressure or of a blow on the weak part and a general feeling of vulnerability about the head. On account of this one man wore a large and clumsy metal plate over his injury.
- (3) Headaches and head pains.
- (4) An appearance of dulness and apathy. This was noticeable in two of my cases, and particularly so in one case, which quite altered in facial expression after reparation. The patient became quite smart and alert in expression, and was delighted "that he could now run and jump with the best."
- (5) Weakness of memory.—This was also specially remarkable in two patients who were relieved.
- (6) Epileptiform attacks occurred in one case. They were not relieved by operation, and were probably due to other causes.

The pulsating deep depression in the scalp, varying in level with the position of the body, produces quite a repulsive deformity if in a conspicuous part of the head.

It is very remarkable that, even at this late stage of the war, the treatment of skull deficiencies is by no means in a settled state. One would have expected, the principles of the treatment required being so obvious, that one outstanding method would have been developed. On the contrary quite a number of different operations are set forth, and one method which seems much the most advantageous is receiving the least notice.

The indications to be aimed at in an ideal operation are:

- (1) That the brain case should be restored as nearly as possible to its original condition, especially as regards cubic capacity, shape and rigidity.
- (2) The gap-filling should be of the same nature as that of the lost substance.
- (3) The external surface should be of the original shape, strength and rigidity, not only for cosmetic effect, but also to restore the patient's confidence in the permanent reliability of this part of his skull.
- (4) The operation should be as simple and the trauma and inconvenience should be as slight as can be arranged.

The following procedures have all quite recently been advocated in the surgical journals, and to my mind their value may be assessed by the efficiency with which they satisfy the above-mentioned requirements:—

- (1) Insertion of foreign substances, such as very thin perforated silver plates, thin perforated celluloid and even gold and aluminium. All bone operations seem fated to go through the "foreign body" stage.
- (2) *Fascia lata* grafts, of use in very special cases to replace dural deficiency, or where it is undesirable to restore the skull, but it is difficult to appreciate the special virtues of *fascia lata* for skull caps, when the occipito-frontal aponeurosis has already failed to fulfil the operator's desires.
- (3) Autogenous cartilage grafts. This method has found favour both in England and France. It consists in the insertion of costal cartilage shavings into the gap. Experience shows that cartilage retains its original structure for months; it does not ossify and does not improve in strength and rigidity. One suspects that the main reason for its popularity is the ease with which it may be obtained and shaped to the gap. While this is a very desirable quality, cartilage must obviously fail in the other requirements.



- (4) Autoplastic bone grafting must finally appeal to most surgeons as being likely to give the best and most permanent results. Even here quite a variety of sites have been used, including the iliac crest, the trochanter, and the scapula, but the main issue rests between the tibia, as a favourable field, and the ribs. The anterior surface of the tibia is very easily accessible, and has recently been ably advocated in several quarters, while the ribs appear to have either fallen into disfavour for this purpose or never to have had the full trial to which they are justly entitled.

There are several objections to the tibia for skull grafting which do not apply to the ribs, when used as hereinafter described. In the first place, unless one has a special bone grafting set of instruments, it is not at all easy to obtain a large tibial graft with periosteum intact and without injuring the crest. Undoubtedly crest injury greatly spoils the mechanics of the tibia. If, ignoring this point, the removal of a portion of the crest is undertaken, it greatly weakens the leg, while a piece of bone (the crest) is obtained which is unsuitable for the work in hand. Even under the best circumstances the leg will not be used freely for several weeks.

Next, the graft, while strong and rigid, is also very brittle, and cannot easily be shaped to the skull conformation. It will either be much too flat or the attempt at shaping it will result in the production of unsightly angles, or in splitting the bone undesirably. The difficulty of retaining intact the periosteum on the shaped grafts and then suturing it to the pericranium, does not appear in its true perspective in a printed article. It is not at all easy to fill a large skull defect of irregular shape with a tibial graft and then fix it reliably in position, especially if the gap happens to be on a well-curved portion of the cranium and the graft in several pieces of unequal size.

My experience of the operation, as one of its advocates also remarks, is that the patient will complain of his leg more and for a much longer time than his head, even if the surgeon has the advantage of using an Albee set.

The ribs, however, supply generously an almost ideal material for the purpose, and one to which the above disadvantages do not apply. They are easily approachable, easily worked and, either naturally conform to the outlines of the skull or can be easily made to, while at the same time they are sufficiently strong and rigid, and can be securely fastened in position without difficulty. The required instruments are of the simplest, and the graft after several months appears to be part of the skull itself.

In my earlier operations I used the whole thickness of the rib, but finding this expensive in material for large grafts, I began to split the bone, and now only take the outer half of a rib, leaving the rest of it *in situ*, and thus the thoracic mechanism is little affected. The piece of rib removed appears to me to fill the bill very satisfactorily indeed, and with the least injury to the patient.

#### Technique of the Operation.

- (1) Rectal anaesthesia should be given in all cases.
- (2) Raise a rounded flap, leaving the pericranium intact. The dissection from the fibrous covering of the brain may require care, especially under the original wound cicatrix. In a large deficiency, this part of the operation may produce considerable shock.
- (3) Incise the pericranium close to the edge and raise it for 1.9 cm. ( $\frac{3}{4}$  inch) all round. Free the skull edge from cicatrix and underlying *dura* with the engine and curved elevator.
- (4) Refresh the bone edges with a gouge forceps and remove the outer table for 1.25 cm. ( $\frac{1}{2}$  inch) all round. For this a large carpenter's gouge, 3.2 cm. ( $1\frac{1}{4}$  inch) across, is the best instrument, being both sharp and strong.
- (5) Measure with a compass the distance between the outer margins of the freshened skull edges. Then replace the scalp and cover the wound.
- (6) On the same side of the body make a free incision over the 6th or 7th rib; free the muscle attachments, leaving the periosteum. Next split the rib on the flat to the required extent, removing the outer table with periosteum and cancellous tissue intact, and leaving the rest of the bone in position. If necessary repeat the process on adjacent ribs. The rib-splitting is done with a thin, sharp carpenter's chisel, 1.9 cm. ( $\frac{3}{4}$  inch) wide, and with the edge ground to a semi-circular shape, so that it insinuates itself along the bone. This graft can be easily cut with a strong pair of scissors and easily adapted to any curvature. The graft is not handled nor placed in saline. It is either immediately placed in its new bed or left in the old position till required. If more than one graft is used, the adjacent edges are freshened with scissors.
- (7) Plant the graft on the refreshed skull ledges, with its extremities under the pericranium, which is sutured to the graft. Similarly fill up the remaining gap. Then pass a couple of catgut sutures transversely across the grafts between the pericranium of the opposite sides of the deficiency. This greatly increases the security of the work.
- (8) Replace the scalp, allowing freely for drainage for 24 hours, owing to the risk of a haematoma.

In seven days the sutures are removed, and the patients are up and about on the 10th day with both wounds solid and comfortable.

One needs to have used the tibia as a field of graft supply to appreciate the advantages of the rib in skull work from the beginning of the operation to the appearance of the final result some weeks later.

As regards after results, curing skull defects makes very grateful patients; I think chiefly owing to the increased feeling of security and the relief from the deformity. Vertigo is the symptom most constantly relieved. Two of my patients remarked repeatedly on the improvement in their memory. My last patient, who complained of dizziness and constant headache, says that both have disappeared, though it is yet too soon to be sure of the final result.

In all my later cases (split rib cases) the restored outline has been almost perfect and in marked contrast to the flat appearance of my tibial graft case.



I have done 13 or 14 cases; all of them healed without any trouble, except in one patient, who had a small sinus for a few days through the centre of the old injury scar.

#### DISABILITIES OF THE WAR.

By T. F. Brown, D.S.O., M.R.C.S., L.R.C.P.,

Major, Australian Army Medical Corps, Surgeon, Ararat Hospital, Victoria.

During the progress of the war, there is no doubt all have been struck with the very large number of wounded men in the Australian Imperial Force who have been invalided to Australia as permanently unfit, even after their wounds have healed.

One would ask the question, what is to become of these unfortunate men when the war is over? That many social and industrial efforts to assist them will be made, no one for a moment doubts, but the problem of the reduction of the heavy and enduring expense to the country entailed by these disabilities, viz., pensions and the impairment of civil industry, is one of national importance.

France has undoubtedly grasped the situation, and is treating these chronic cases by electrical, mechanical and actino-therapeutical methods at the *Grand Palais*, Paris, with remarkable success.

As Douglas Research Scholar in actino-therapeutics at Guy's Hospital in 1912, I had many opportunities of proving that this system is one of great value, and we now have the most convincing evidence of this. The officers of the *Grand Palais* are unanimous in claiming for it an efficacy in the reduction of war disabilities, which no other method possesses.

The people of Australia, after 2½ years of war, can rest assured of the success and splendid medical services rendered for the care of the wounded by the Australian Army Medical Corps; but the question for the Government is, what answer will it give if similar installations to the *Grand Palais* are not provided. I am quite convinced that the use of electricity and massage, as usually performed, although beneficial in a suitable number of cases, does not go far enough. Physical treatment in a combined and systematic form is necessary, and nothing less than this should do. The vast number of permanently unfit men impairs civil industry, besides being a heavy charge on the national funds.

As stated above, to get the best results for the permanently unfit, combined regular and systematic forms of massage, baths, electrical and actino-therapeutics must be given.

From enquiries, I find that the system of the *Grand Palais*, broadly speaking, is:—

- (a) Preparation by moist or radiant light and heat.
- (b) A thorough course of massage, manipulated mechanical treatment, and electricity.
- (c) Re-education of the affected muscles by exercises and training.
- (d) The results carefully checked by measurement of initial defect and ultimate gain.

I am informed that the capital value of gratuities and pensions saved by this method in France is considerably over two million pounds per annum already.

I would, therefore, urge for the consideration of the Government that a small clinic be established in England, where permanently unfit men could begin early treatment, which is most important, and a larger base clinic in Victoria; that opportunity should be given to two or three of the medical officers of the Australian Army Medical Corps to attend the *Grand Palais* and the London clinic to study the following:—

- (a) Dry heat (radiant light and heat),
- (b) Wet, whirlpool bath,
- (c) Massage and manipulation,
- (d) Mechano-therapy, by the Zander method, isolation of muscles and movable weights,
- (e) Electrical methods (galvanism, faradism, diapedesis, etc.); the use of the panostat,
- (f) Re-education of muscles,
- (g) Detection of malingering,
- (h) Schemes for the formulation of a scale of gratuities according to various disabilities caused by wounds.

The medical officer in charge should have good knowledge of actino-therapeutics and electricity, and should be able to instruct and lecture to nurses and laymen to assist in the various treatments.

#### A METHOD OF ESTIMATING MINUTE TRACES OF CALCIUM.

By Sydney Pern, M.R.C.S., Eng., L.R.C.P., Lond.,  
Melbourne.

For some time there has been a good deal of speculating as to the possibility of variation in the calcium content of the blood. Of the pioneers of this work the names of Sydney Ringer, Sir James Barr and Blair Bell are worthy of mention. Although the methods of the two latter never led to any workable scheme, they were distinctly stimulating. The administration of calcium salts clinically led one to believe that, at times, the system was depleted of calcium below its normal content and *vice versa*, so one hoped to be able to show a variation in the blood by some easy method. Blair Bell's method, which consisted in depositing crystals of calcium oxalate, was given a good trial, but as calcium oxalate crystals hardly ever come down twice the same size, it was found to be quite unreliable. Sometimes large crystals form and at others small ones, and after many fruitless attempts to produce crystals of an even grade, it was given up. Next it was decided to try to precipitate calcium as calcium oxalate and use the nephelometric method. After innumerable trials that had to be abandoned, owing to the varying sized crystals causing different degrees of opacity, with actually the same quantity of calcium.

In the process of those investigations various things were learned.

Ashing the blood was essential to ensure all the calcium being obtained. In the process of ashing there was danger of the blood spluttering out and also of the chlorides, which are very volatile, being lost. It was found necessary to use thimble-shaped platinum crucibles, as one was liable to get a flux formed if porcelain ones were used. The spluttering could

be avoided by burning the blood in a Bunsen-burner, carefully passing it to and fro and not attempting to dry off first.

The loss of chlorides was overcome by using a small electric furnace, the heat being regulated by means of varying numbers of lamp resistances, and never ashing above a dull red heat.

Various other methods, such as trying to precipitate the calcium as phosphates or sulphates, were tried without success.

Some very excellent results were obtained by utilizing the fact that coagulation of white of egg varied according to the amount of calcium present, but these were given up, as not being an easily workable method.

In testing the various methods of trying to precipitate calcium oxalate with even-sized crystals, alcohol was used, and it was found that the crystals came down very rapidly instead of taking some hours. Varying amounts of alcohol were therefore tried, and it was found that certain proportions of alcohol caused the calcium salts to come out of solution almost instantaneously as a fine precipitate, giving a dense opacity. When put under the ultra-microscope, it showed no crystalline form, but small round masses about  $0.1 \mu$  across. Comparing them with a typhoid bacillus, it was estimated that it would take 128 to make up the same size. These particles are so fine that they remain in suspension for some time, and 0.0025 mg. of calcium will show a perceptible opacity in 4 c.cm. volume.

The details of the present process are as follow:—A small glass tube is marked to 1 c.cm. content, and blood is drawn from a vein with a hypodermic syringe and immediately transferred to the tube up to the 1 c.cm. mark. This is transferred at leisure to a platinum crucible, a little distilled water being used to wash out the tube; this is also transferred to the crucible. It is then passed to and fro through a strong flame, and with practice one is able to burn the blood to a black ash without any bubbling over or spluttering, which is inevitable if it is dried off first. It has also the advantage of being rapid. It is then placed in a small electric furnace (made by the writer) which is already at a dull red heat, and left there till thoroughly ashed, about half an hour being ample. During the ashing controls and filter-papers are prepared.

For the nephelometric method the writer uses glass tubes of an even bore with flat bottoms, about 8 cm. long, and marked in 1 c.cm. gradations. Total capacity would be about 8 c.cm. Double filter papers are used, 4 cm. in diameter and very small glass funnels. The filter-papers are rinsed through with 4 c.cm. of 2% acetic acid, which is found sufficient to eliminate all traces of calcium from them. When the crucibles are cool 1 c.cm. of 2% acetic acid is run off into each, if several estimations are being done, by means of a graduated pipette with a rubber teat. They are then stirred round with a glass rod, the rod being rinsed after each use. The contents are drawn up with a pipette and filtered, the same care being taken by rinsing the pipette each time.

Another 1 c.cm. of 2% acetic acid is again run into the crucibles, and after agitating is filtered. A

half of a cubic centimetre of distilled water is used to wash out the crucibles; this is then passed through the filter papers, making a total of 2.5 c.cm. in the tubes. If there is any variation, the tubes are filled up to the 2.5 c.cm. mark with distilled water. A solution of a calcium salt, phosphate or chloride in dilute acetic acid is used of the strength of 0.0025 mg. of calcium in 100 c.mm.; for controls, 600 c.mm., 700, 800, 900, 1,000, 1,100, 1,200 giving a wide range which represents 0.015, 0.175, 0.02, 0.0225, 0.025, 0.0275, 0.03 mg. of calcium. These are placed in the tubes and filled up to 2.5 c.cm. with distilled water.

Now all are ready for testing.

Add 1.5 c.cm. of alcohol (ordinary methylated spirit will do), and then three drops of a saturated solution of oxalic acid from a dropper. The solutions are all shaken as rapidly as possible, and within a few minutes the results can be read by looking down the tubes and comparing with the controls. A 10% variation, even in such small quantities, can be estimated by this somewhat crude nephelometric method, and with the advent of one of the new instruments, finer grades will easily be obtained.

These researches were started in October, 1913, and have been carried on until the present time, it being thought advisable to make large numbers of estimations in various clinical conditions before publishing the method, but on the appearance of Mr. Henry Lyman's articles in the *Journal of Biological Chemistry* (March and May, 1917), it was decided to make this preliminary communication.

The first part of Mr. H. Lyman's process was the extraction of calcium from the blood by the addition of three times its volume of a 6.5% solution of trichloroacetic acid. It was decided to ascertain whether all the calcium was obtained by this method and also whether the test put forward by the writer would answer in the presence of trichloroacetic acid. For if this were successful, it would obviate the necessity of ashing the blood. On putting this to the test, it was found that the precipitate came down equally well in trichloroacetic acid which had been rendered only faintly acid with ammonia, as in dilute acetic acid.

A test was then carried out to determine whether there was any difference between the readings of blood which had been ashed directly and the ashed filtrate of blood treated with trichloroacetic acid. The results were the same.

Next, the residue of 20 c.cm. of blood treated with 40 c.cm. of trichloroacetic acid was thoroughly washed with distilled water and then ashed; 0.02 mg. of calcium was obtained. The normal content being about 1.0 mg. of calcium in 20 c.cm., according to my method, so in the sample of blood used this would show a 2% loss of calcium in the residue, which, for clinical work, is negligible.

Laked blood was tested against unlaked blood and no appreciable difference was found.

For a rapid and easy clinical method the following would suggest itself. Run a given quantity of blood into twice its volume of a 6.5% solution of trichloroacetic acid. This proportion is recommended; as, if a greater dilution is used, the resulting precipitate is rather faint. Allow the mixture to stand for 24



hours, or put it into the centrifuge for a short period. Two cubic centimetres of the clear supernatant fluid are pipetted off into the nephelometric tube, and not quite neutralized, that is ammonia is added until the reaction is faintly acid. Then 1.5 c.cm. of alcohol and 3 drops of a saturated solution of oxalic acid are added.

The controls are prepared as directed, their volume being made up to the same level as the solution to be tested, and the same amount of alcohol and oxalic acid used. All are then shaken and the result read off within a few minutes.

My thanks are tendered to Professor Osborne, of the Melbourne University, for much advice and help during these investigations.

#### THE TREATMENT OF POTTS' DISEASE BY AUTOGENOUS TIBIAL BONE GRAFTS (ALBEE'S OPERATION).<sup>1</sup>

By Theodore Ambrose, M.S., M.B.,

Senior Surgeon to the Children's Hospital, Perth; Senior Outdoor Surgeon to the Perth Public Hospital.

This article is written with the aim of bringing more clearly before the medical profession in this country the benefits to be derived from Albee's operative technique in the treatment of tubercular spine disease. Up till recent times the treatment of this complaint was, generally speaking, long and tedious, and the results unsatisfactory. Eminent authorities placed the duration of treatment at anything from five to seven years, the greater the authority apparently the greater the time. If, therefore, by a comparatively simple operation one can reduce the length of treatment to a few weeks, it surely is worthy of trial.

By Albee's operation, in suitable cases the patient, after six to eight weeks' recumbency, is enabled to get about without support of any kind; in more advanced cases, perhaps a little more rest, with some mechanical support, may be desirable.

What are the indications for and contra-indications to, the operation in tubercular spine disease? Albee says there are practically no contra-indications, unless the skin over the affected part be septic; he even does not regard abscess-formation as a contra-indication, provided it does not affect the actual tissues to be cut through. Personally, I have operated on no cases with definite abscess-formation, but none have come under notice. Those cases with a large area of the spine affected, half a dozen or more vertebrae, should be regarded with diffidence. No doubt some improvement may be hoped for by the insertion of one or more long grafts in these cases, but they are not the most satisfactory. Very young children should not be subjected to this operation. Two cases in patients under three years of age on which I operated, terminated fatally in about 24 hours. I have come to the conclusion that it is unsafe to operate on children under three years of age. Apparently the American surgeons, who largely employ this operation, have had similar experiences, for in a recent article I see they

are also advocating no operation on very young children.

The two fatal cases in my series were both in small, weakly children, but the cause of death was not obvious. Each operation was an easy one, and was quickly done. There was no apparent shock. Acid intoxication and tuberculin poisoning were suggested as causes, but there was nothing diagnostic of either. Children above the age of three and adults have done well; the oldest patient operated on in my series was 49 years. The most favourable cases are the early ones, before angulation occurs, or those in which the deformity affects only one, two or three vertebrae. These do splendidly, and I would strongly recommend the operation for cases of this kind.

Operation upon subjects in whom the cervical vertebrae are affected is much more difficult than when the lesion is in the dorsal or lumbar vertebrae. The administration of the anæsthetic in these cases also is associated with more difficulty. Nevertheless, many of these cases are well worth doing. One small child, with very marked cervical deformity, had been unable to lift her head off her chest. Even with a spinal jury mast she obtained very little help. She was unable to walk. Three months after operation, a very difficult procedure, she was able to get about, and also to keep her head up without any mechanical support.

#### The Operation.

Briefly stated, the operation consists in the insertion of a bone graft of a suitable length, derived from the tibia of the same person and inserted into a gutter formed by splitting the spinous processes of the vertebrae at and beyond the site of the lesion. The spinous processes of one or two vertebrae, both above and below, as well as those of the affected segments, are utilized. An elliptical or quadrilateral flap of skin and fat is reflected, so that the scar does not fall in the mid-line. The spines and interspinous ligaments are then incised with scalpel and chisel, the spines split and one half broken off, but left attached by soft tissues. A gutter is formed, running through the spines and interspinous tissues, large enough to receive the graft. The tibia is next exposed, and the graft removed by chisel or parallel circular saw. The length and curve of the graft must correspond roughly to the curve and length of the gutter. These can be estimated by bending a probe to fit the gutter, then laying the probe on the tibia and marking out the shape by incising the periosteum with a scalpel.

Albee insists that the graft be cut so as to include periosteum, bone, endosteum, and bone-marrow. I have several times taken a graft from the crest of the tibia without penetrating the medulla and have had equally good results.

Since Macewen, Albee, the late J. B. Murphy and other high authorities have expounded such divergent views on bone regeneration, we can only regard the question as unsettled.

The graft removed can be placed in warm saline solution, while the spinal gutter is further prepared. It is then inserted in the spine and secured in place by strong chromic catgut or kangaroo tendon sutures. If the spines at the seat of deformity are too prominent, they can be partly clipped off, thus improving

<sup>1</sup> Read at a Meeting of the Western Australian Branch of the British Medical Association on August 15, 1917.



the cosmetic effect. The strong dorsal aponeurosis is then secured over the site of the graft and all bleeding points being secured, the skin is brought together with silkworm gut sutures.

Much time is saved if the patient be kept in the prone position throughout. To remove the tibial graft, the leg is flexed back on the thigh and held in that position. It is desirable to have two assistants besides the anaesthetist, one to help with the spinal part and one with the tibial, the latter sewing up the leg and attending to hæmostasis while the surgeon proceeds with the spinal operation. The asepsis should be of the strictest, hand-contacting of the wounds being avoided as far as possible. The surgeon should handle the instruments direct from the tray. A plentiful dressing should be strapped over the wounds and the patient kept on his back for from 6 to 8 weeks. The leg from which the bone was taken may be elevated slightly for a few days. An air bed with a spinal cleft is a great convenience in these cases. The skin sutures are removed in 10-14 days.

#### Objects of the Operation.

The operation relieves pain, prevents further deformity and usually decreases the existing deformity. It greatly reduces the duration of treatment. The graft acts as a splint or ramrod and stiffens the spine. In spite of this stiffening action, there seems to be very little decrease in the mobility of the spine after the first few months. Albee believes that there is active bone-formation by the osteoblastic cells of the graft; others dispute this view.

My own series of cases is limited to 14, spread over the last two years. Of these 3 were adults, the remainder children. Though the number is small, it has been sufficient to demonstrate to me the utility of the operation.

The mortality has been 14% (2 out of 14); this is far too high, and I consider the mortality should be nil, if no children under 3 be operated upon. Weakly subjects should be treated constitutionally with good light nourishment, rest and some extension before operation is undertaken: a course of alkali for a few days before operation is also a wise measure. Of the 12 patients surviving the operation, in one only was the result unsatisfactory. This was a boy of 8, who had been on his back for 2 or 3 years; he had great deformity with pressure symptoms, inability to walk, exaggerated reflexes, clonus, etc. This was the only case in which there was any wound trouble. A mild sepsis occurred about 4 weeks after operation, the chromic catgut sutures worked out, the wound opened and the graft was visible for some weeks. It did not, however, separate, and eventually the skin healed over it and remained healed. The patient was allowed up from bed in three months and walked for the first time for years. His reflexes became almost normal.

I am afraid that he overdid things in his joy. Perhaps we should have helped him with a jacket for a time; or maybe, the osteogenetic powers of the graft had been weakened by the mild sepsis. Be that as it may, there was weakening and deformity of several vertebrae above and below the area of the graft and a large hump resulted, so that we had to put the boy to bed once more.

The other cases have done excellently, and both patients and friends have been well satisfied with the results.

A few illustrative cases may be of interest.

The first case operated upon was that of a child of 5 years. She had had a fall a few weeks previously, injuring her arm. When the arm was better, for the first time the mother noticed a spinal deformity. There had been no previous symptoms.

Her medical attendant thought it tubercular and sent the case to me. Another medical man favoured a diagnosis of luxation due to injury. The radiogram and tuberculin test declared in favour of a tubercular spondylitis; there was well marked angulation present, but no pressure symptoms. This child did particularly well, and three or four months after operation was as active as ever she had been. There was no deformity to be detected, and, save for the scar, no one would have suspected the previous trouble.

Two years or more have now elapsed since her operation, and the latest report was most gratifying.

The first adult upon whom I operated was a woman, aged 48; she had had a lesion in the dorsal region many years before, which had become quiescent. Her trouble was now an acute affection in the lumbar region. She was incapacitated from her work, and was not improving after several months' rest, etc. It is now more than a year since the operation was performed. I recently had a letter from her, thanking me for the complete relief of symptoms afforded her by the operation.

The second adult was interesting. He had suffered from miner's phthisis, and had been forced to leave the mines some years previously. His chief symptom was girdle pain, which became very severe at times. There was marked luxation of the twelfth dorsal vertebra, and he was unable to stoop to any degree. Evidently the nerves were subject to pressure at their points of exit from the spine. He had been treated for 12 months, with rest and extension without relief.

Operation completely relieved his symptoms, and removed all obvious deformity. When seen six months later, his spine appeared quite normal; he could stoop fully, without any discomfort, and there was no pain nor deformity.

Another case was that of a girl of 14 years, who had an operation for a lumbar lesion some 15 months ago. She wrote to me the other day, to let me know how well she was keeping. She had been getting about without any spinal support, and had never had any recurrence of symptoms.

I trust that the notes of these few cases will help to make this operation better known and more often employed than it is at present. It is not widely performed in Australia. Some cases have been done in Sydney, and I believe also in Melbourne, but I have been unable to hear of any others elsewhere.

The operation is not difficult to surgeons accustomed to bone work. It is not an operation to be performed by a novice in surgery, or where strict asepsis is not obtainable. Some discretion, too, should be shown in the selection of cases; the very young and weakly, and those with exaggerated deformities, should have their chances of improvement nicely estimated before being submitted to operation.

## Reviews.

## OPERATIVE TECHNIQUE.

Doctor E. Doyen's work, in two volumes, entitled "Surgical Therapeutics and Operative Technique,"<sup>1</sup> edited in English, by H. Spencer-Browne, M.B., Cantab., in collaboration with the author himself, is a treatise which must necessarily attract attention, whether one agrees or not with the principles and practise set forth.

The introductory chapter is somewhat long. One is entirely in agreement with the author that surgery must be based upon a sound knowledge of normal and pathological anatomy; also that it should be regarded as an art, and not as a trade; that a surgeon is far beyond a mere operator, however skilled the latter may be. There is a well-justified protest against the present-day tendency to over-specialization, particularly when based upon an insufficient preliminary training in general surgery and medicine.

On the other hand, one feels that Doyen emphasizes far too much the necessity for rapidity in operating, although he admits his admiration for Kocher's work, which was characterized rather by careful finish, than by headlong speed.

The statement by Doyen that "A vaginal hysterectomy can be terminated in less than two minutes" makes one shudder. And this apart from the fact that for years past it has been demonstrated that vaginal hysterectomy can scarcely ever be justified. Or again, Doyen's aphorism, "Time is Life" may have a meaning entirely opposite to that intended by the author.

Chapter I.—"The Author's Surgical Home," which is included under the heading of "General Surgical Technique," leaves one with mixed feelings. The careful and minute attention to detail is, of course, admirable, but there is a savour of advertisement which is repugnant to British ears. The statement that "General anaesthesia is carried out exclusively by ethyl chloride . . . followed by chloroform," does not commend itself. Surely as a general anaesthetic "open ether" is safer and better; although one quite recognizes the advisability of using chloroform in special cases.

The complexity of the operating tables and operating theatre furniture generally seems unnecessary, especially to one who believes in efficient simplicity.

Many pages are occupied by minute descriptions of obsolete methods and instruments, interesting only from the historical point of view.

In dealing with the principles governing, and the detailed methods to be employed in controlling hæmorrhage, both during and after operation, the author is by no means clear nor convincing. There is much repetition. A multiplicity of instruments and mechanical appliances, such as "the author's forceps"—"the author's erasers," etc., is considered necessary. Surely it is better surgery to know where to find the blood-vessels, pick them up and tie with relatively fine ligatures, than first to crush, not only the vessels and incidentally nerves, but masses of tissue as well, and then to tie the crushed tissues with silk.

The author very properly differentiates between "operations of urgency and operations of opportunity, or regulated operations."

In regard to operations of urgency the advice given is on the whole undoubtedly good.

The lists and pictures of instruments needed will be of use possibly to the young surgeon. The general practitioner will not possess them, while the senior surgeon will have already provided himself with all he requires and finds useful. Twelve pages (236-248) are given over to a description in careful detail of the methods for induction of anaesthesia, both local and general, which meet with the author's approval. One notices that only four lines are devoted to ether anaesthesia, and the "open method" is not even mentioned.

<sup>1</sup> Surgical Therapeutics and Operative Technique, by E. Doyen. English edition, prepared by the author in collaboration with H. Spencer-Browne, M.B.; 1917. London: Baillière, Tindall and Cox. In two volumes. Large Royal 8vo. Volume I.; pp. 746, with 1038 illustrations. Price 25s. 25s.

The author's views on drainage and irrigation are not entirely up to date. His suggestions for the treatment of cancer by a combination of his own "anti-neoplastic vaccine and mycolisine" are not likely to be followed by the medical profession generally.

The actual value of such a book is not easy to define. It is certainly not a work to place in the hands of a student. It is of little use to the general practitioner, and the surgeon of matured experience will find much to criticize and little which is not better dealt with by other surgeons, and particularly those who have devoted special attention to such matters as abdominal surgery, bone surgery, ophthalmic work, etc. It is, in fact, an ambitious attempt to cover the whole of surgical work by one man. This at the present time is an impossibility. On the other hand there is much which is of historical interest in the book. It pictures the life work of a man with a great capacity for work, clever and versatile, an operator of wide experience, but not a great surgeon in the highest acceptance of the term, whose work and teaching can be regarded as having advanced the science and art of surgery.

The publication of this English edition has been entrusted to Messrs. Baillière, Tindall and Cox. The letter press and general "get up" of the book is well up to the publishers' usual standard of excellence.

The illustrations are numerous and well executed. They depict clearly the author's methods and technique.

## Notes on Books.

A short time ago we received two small volumes from Messrs. Angus & Robertson for review. These booklets are entitled "Gum Blossom Babies" and "Gum Nut Babies." At first we failed to understand why they had been sent to us. There is nothing medical about them; at all events not on the surface. There is little to read, although that little is very charming. The pictures are artistic and altogether delightful, clever, poetic and Australian. We had nearly decided that a review would be out of place in a medical journal, when a bright idea struck us. Of course, Messrs. Angus & Robertson, who are good judges of human nature, recognized that an absorbing distraction is medicine to a sick mind. We can warmly recommend Miss May Gibbs's beautiful flights of fancy to a medical practitioner who wishes to prescribe this form of sedative. But we also recommend him to enjoy the pictures himself, before he hands them on to his patient.

Dr. Charles Mercier is well-known to the profession as a versatile writer and as a keen scientific controversialist. His qualities as a psychiatric expert have apparently obscured some of his many other qualities which render him an ornament to the medical profession. He now appears in a new, and, we must add, a wholly delightful light. He has published a book of verse. Behind his name appear the magic symbols "M.C.C." They do not mean "Middlesex Cricket Club." They stand for "Member of the Casual Club." It appears that Mr. H. R. Allport, the secretary of the club, presented to the members a translation of an account, published in a French newspaper, of a day's fishing by his most gracious Majesty King George. Mr. Allport says that King George's methods of salmon fishing, as set forth in the article, are new to him and possibly to King George himself. The story is rich in imagination. Dr. Mercier could not resist the temptation of telling it in a half a dozen ways in as many styles of verse.<sup>2</sup> To say more would be to spoil the pleasure of the reading. Copies can be bought of the Mental Culture Enterprise, 329 High Holborn, London, W.C., 1. Buy it, and when you have finished it, hand it to any acquaintance in need of a tonic.

<sup>1</sup> "Gum-Nut Babies," words and pictures by May Gibbs; 1917. Sydney: Angus & Robertson, Ltd. Royal 8vo., pp. 26. Price, 1s. net.

<sup>2</sup> "Gum-Blossom Babies," words and pictures by May Gibbs; 1917. Sydney: Angus & Robertson, Ltd. Royal 8vo., pp. 24. Price 1s. net.

<sup>3</sup> The King's Fishing, Done into Verse with Notes Critical and Explanatory by Charles Mercier, M.C.C.; 1917. London: The Mental Culture Enterprise. Crown 8vo., pp. 50. Price, 1s, 3d, net.



## University Intelligence.

### THE UNIVERSITY OF SYDNEY.

A meeting of the Senate of the University of Sydney was held on November 5, 1917, at University Chambers, Phillip Street, Sydney.

A letter was received from the Department of Defence, thanking the University for the services of Major Stewart in the office of Director of Veterinary Services at Headquarters.

A report for the year 1916-17 of the Sydney University Women's Union was received, and Mrs. Barff, M.A., and Dr. Constance D'Arcy were reappointed representatives of the Senate on the Board of Directors.

A letter was received from Mr. H. A. Russell, B.A., accepting the appointment of University Solicitor.

It was reported that the Governor-in-Council had signified approval of the amended by-laws for the department of economics and commerce, Chapter XVI. B.

A letter was received from Mr. Arthur Muddle, enclosing a legacy of £100 under the will of the late Mr. Joseph Miller.

A letter was received from the Royal Agricultural Society offering an exhibition of £100 *per annum* for a selected diploma student from the Hawkesbury College for the course for the degree of B.Sc. in Agriculture. It was resolved that a letter of thanks be sent and that Professor Watt and the Warden confer with the Council of the Agricultural Society in regard to the regulations for the award of the exhibition.

On the recommendation of the Dean of the Faculty of Medicine the following degrees were conferred *in absentia*:—Master of Surgery: A. J. Hope, M.B., and R. L. Poulton, M.B.

On the recommendation of the Joint Committee for Tutorial Classes, it was resolved: (i) that Mr. E. S. Jerdan, B.A. (First Class Honours in Modern History) be appointed Tutor in History, and (ii) that Mr. G. V. Portus, B.A. (Syd.), B. Litt. (Oxon.) be appointed Assistant Director of Tutorial Classes.

On the recommendation of the Professorial Board it was resolved that Major A. R. Edwards be admitted to the degree of Bachelor of Engineering in Mechanical and Electrical Engineering under the provisions of the by-laws lately made to meet the case of students who have been engaged in active military or naval service.

### THE UNIVERSITY OF WESTERN AUSTRALIA.

At a meeting of the Senate of the University of Western Australia held on October 15, 1917, Mr. J. S. Battye gave notice that he would move at the next meeting:—

That the resolution of the Senate dated November 18, 1912, "that no fees be charged for students of the University," be rescinded.

Mr. W. Somerville gave notice that he would move as an amendment:—

That experience in financing the University having shown that the present appropriation is not sufficient for the up-keep, and as it is inexpedient in the present condition of the State's finance to approach the Government for further moneys, and as it is undesirable to depart from the principle of free education, it is resolved that the number of professorships and lecture-ships be so reduced as will permit of the University being maintained by the present grant.

At the quarterly meeting of Convocation held on October 29, 1917, Dr. D. P. Clement moved:—

That Convocation request the Senate to reconsider the decision to charge no fees at the University.

In justifying the motion, he stated that the proposition of a free University was impracticable. He doubted whether any member of Convocation would like to feel that he had graduated at a free University. In his opinion, the system of free University education would tend to lower the standard. He proposed that a system of bursaries should be relied on to assist students who could not afford to pay.

Professor Shann stated that it was doubtful whether the student in a free University was as serious in his studies as one who had to pay. If fees were charged, they would

be able to rely upon the personnel of the students, and the Senate would be able to contribute a sum for bursaries which would be sufficient to provide a living for a student who could not avail himself of the facilities without monetary aid. He was satisfied that the charging of fees would increase the intellectual strength of the institution. He referred to the attitude which the other Universities had adopted towards the University of Western Australia, which was the only free University in the Commonwealth. He thought that the students would value their training more if a pecuniary sacrifice had to be made in order to get it.

Mr. W. Somerville opposed the motion, largely on the ground that the demand for payment by students might give rise to a suspicion that it was the intention of the Senate to exclude the children of the wage earner. He also thought that it might weaken the support which the University at present enjoyed.

While supporting the motion, Professor Dakin suggested that there should be a fund from which students and parents, who were in poor circumstances, could receive financial assistance.

Mr. H. S. Thompson suggested that it would be like "an aristocratic sneer" if they called their University a charity University.

Sir Walter James, K.C., was of opinion that the matter should be decided in the light of what was best for the University, and not from the point of view of the wage earner, the middle class man or the aristocrat. He was inclined to agree with those who held that what was obtained for nothing was of little value. He proposed that a Committee of Convocation should consider the question and report on it.

The Chairman, Mr. J. S. Battye, agreed with the suggestion, and was prepared to ask the Senate to defer the consideration of his motion, pending the report of the Committee. A Committee was accordingly appointed, the following serving as its members:—Mr. W. Somerville, Dr. D. P. Clements, Mr. H. S. Thompson, Professor Dakin and Mr. Parsons.

## Naval and Military.

The 351st list of casualties, issued on November 7, 1917, contains 1,622 names. The number of dead is 397, of wounded 1,018, of ill 159 and of missing 48. Among the list of wounded are the names of Captain Noel Edmund Barton Kirkwood, M.C. (see last week's issue), and Major John Robb Muirhead.

From another source we learn that Captain Arthur John De Size Howard has been wounded.

According to an announcement in the public press, Captain Eric Payten Dark has been awarded the Military Cross.

### AUSTRALIAN ARMY MEDICAL CORPS COMFORTS FUND.

The last three weeks have brought contributions amounting to eight, nine and eight guineas respectively to our appeal for the Australian Army Medical Corps Comforts Fund. If this rate of progress is maintained, the Fund will have benefited to the extent of £150 by the end of the year. The brave boys labouring for our sakes under the unenviable conditions of a winter in Flanders, France and the other theatres of war, facing danger and death the whole time, have surely some claim upon us. It is little enough to give a pound or two to make things a little more bearable. We thank the two contributors for their generous donations.

	£	s.	d.
Amount previously acknowledged ..	99	0	0
Dr. Alex. Krakowsky (Renmark, S.A.) ..	3	3	0
Dr. W. N. Robertson (Brisbane) ..	5	5	0

It has recently been announced that the Department of Defence are seeking men for employment in the artificial limb factory which they have recently established. It is stated that preference will be given to returned soldiers who have themselves lost a leg. We understand that this factory is under the management of a member of the Carne Company, who has been brought over from America for the purpose.



## The Medical Journal of Australia.

SATURDAY, NOVEMBER 17, 1917.

### A Problem in School Hygiene.

In another column we publish a summary of the annual report of the Medical Inspector of Schools of South Australia. The report reveals a conflict of opinion between the Medical Inspector and the Central Board of Health on a matter of extreme importance. The questions at issue are whether schools should be closed on account of outbreaks of epidemic diseases, and "contacts" and "suspects" should be excluded from the schools when only one room is closed, or whether intelligent supervision over the "contacts" and "suspects" should be exercised and isolation enforced as soon as a disturbance of the general health of a child is manifest. Incidentally the Medical Inspector demands that the control of infective diseases in schools should be vested in the Medical Branch of the Education Department. We note with extreme regret that the Minister of Education, in his general report, does not devote a single word to the subject of the health of the children under his care. He deals in detail with examinations and finance, but not with the essential well-being of the bodies and minds of the children, without which education must become a farce and even a detriment to them.

The existing system of a dual control of school children in respect to epidemic diseases cannot be supported by a single argument. At present, when a school child is taken ill, the teacher is required to notify the Director of Education and also the Secretary of the local Board of Health. The local Board of Health, on receiving a notification from a medical practitioner or other person of the occurrence of a notifiable disease, is required to notify the Central Board of Health. The same applies to the occurrence of a case of notifiable disease at the house in which a school child lives. The Central Board of Health has determined that the following measures shall be carried out. The school room, in which a

child was found to be suffering from an infectious disease, must be closed at once, provided that there is reason to believe that the child was in a condition to spread the infection to others. The room may not be used until it has been disinfected with formalin vapour, although all movable articles are to be taken out and dusted or washed. The local Board of Health, usually a very inexpert body, has the duty of "seeing" that this disinfection is carried out by the officers of the Education Department. All "contacts" must be excluded from the school for the period of the average incubation period of the particular disease in question. These "contacts" include all the children who have been attending in the room. More than that, all other "contacts" and "suspects" are to be excluded from the school. Dr. Halley, the Medical Inspector, adduces conclusive proof that the epidemic diseases of childhood are not spread by means of inanimate objects. To rely on disinfection of a room to check the spread of diphtheria or measles, is to adopt a measure which has been discarded as illogical and ineffective long ago. The Central Board of Health is not even consistent in its views, for while the walls and floor are exposed to formalin vapour, the unwashable articles are removed and dusted outside, presumably to be returned after the process of disinfection is complete. However, a thorough cleaning will not do the room any harm. It is the closure of the room to which we are bound to take serious exception. In the next place, the children who pass their days in the school room, are excluded from school by order of the health authority for a time varying between 12 and 21 days. A few of these children may have been infected and in the course of time will manifest the disease. During the whole of the incubation period, they will be incapable of passing the infection on to healthy children. Then why exclude them from school? At the end of the incubation period, the child becomes infectious. At the school the first signs of malaise could be detected without loss of time and with but little risk, provided that an intelligent supervision were exercised. But when the child is at home, which usually means playing about the streets with other children, going to the "picture show" or nursing the baby in its own home, no intelligent supervision can be carried out and the result will inevitably be that the disease will steal a

march on the health authorities. The majority of the children will escape infection, provided that the illness of the first child has been recognized at once and the patient isolated. These uninfected children are forced to stay away from school, because of a fear that they might at a later date become infective. The child loses its schooling; it learns lazy habits and becomes a nuisance to its parents. The system is wrong in essence and in every detail. In the last place the Central Board of Health requires that the child and its clothes shall be disinfected after exposure to any infectious disease before it may return to school. This is a startling proposal. How the disinfection of the child is to be carried out, we do not know. The disinfection of the clothes usually means a waste of money which the parents often can ill afford, for disinfection means damage to the clothes. Under these circumstances, it is quite obvious that the dual control under the circumstances obtaining in South Australia is not in the interests of the children and should be discontinued. The control should be in the hands of the Medical Branch of the Education Department, for this Branch has the duty of dealing with the health of children in schools. Since fresh legislation is necessary to bring about this reform, the sooner it is introduced, the better it will be for the children of South Australia.

#### THE STUDY OF HEREDITY.

The story of science is as full of episodes replete with human interest as the history of nations. Few tales are more dramatic and pathetic than the chronicle of the scientific studies on inheritance of the Abbot Mendel. In February and March, 1865, Gregor Mendel read before the Natural History Society of Brunn an account of his experiments on the distribution of characters in the hybrids resulting from the crossing of different kinds of peas. A year later this communication appeared in print in the Proceedings of the Society. Aware of the exactitude of his observations and of the simplicity of the explanations that he offered, Mendel awaited their confirmation or refutation. Although a number of distinguished naturalists, including Charles Darwin, were acquainted with this paper, no consideration was given to the conclusions of the

worthy Abbot. Neglect so abated his confidence and enthusiasm that he did not publish his investigation of inheritance among bees, though he had used fifty hives for his experiments. He died in 1884 after several years of depressed spirits. Occasionally in brighter moment he would say that his time would come, but he had slept for sixteen years in his grave before de Vries, Correns and Tschermak, within a few weeks of each other, drew attention to these lucid researches. During the next ten years thousands of contributions had been made to the subject of the Mendelian laws of inheritance. In 1905 a distinguished biologist, William Bateson, searched the library of the monastery of Brunn and the archives of the local scientific societies for any papers left by the humble ecclesiastic. Too late it had become known that years, perhaps centuries, might glide away before another genius might point the way of progress so clearly perceived by Mendel.

The importance of Mendel's studies does not lie in the establishment of the theoretical laws of dominance and segregation named after him, but in the demonstration of certain facts of inheritance exhibited in the appearance of some characters of the parents in different generations of hybrids. Like Harvey's proof of the circulation of the blood which shows how the blood travels through the veins, heart and arteries, Mendel's experiments reveal how the qualities of the parent plants make their appearance in the subsequent generations. Whether the Mendelian laws have a wide application or not, and whether they offer a satisfactory theory of heredity may be subjects for debate, but the facts ascertained in the garden of the cloister will remain for all time. To Mendel we owe a method of experiment by which it is possible to discover how various characters are distributed from one generation to another. He forged a key which has unlocked doors which had been closed fast despite many attempts to force an entrance.

Mendel endeavoured to learn about heredity by crossing together plants of allied species or varieties which showed differences in regard to certain characters. He recognized the necessity of starting his experiments with material that bred true in regard to the characters observed, of devoting attention to

each character separately and of keeping each generation distinct in his records. He understood the need of considering the progeny of each individual plant separately. He crossed a tall-growing with a dwarf-pea. The hybrids raised from the seed were all tall. On self-fertilization of the hybrids, the resulting seeds gave rise to tall and dwarf plants in the proportion of three tall to one dwarf pea. The dwarf plants on self-pollination or after crossing with other dwarf individuals yielded only dwarf plants, while the tall plants were of two different kinds. Some of these tall plants produce tall plants only, but others on self-pollination yielded tall and dwarf offspring in the same proportion of three tall to one dwarf plant. The pure breeding tall plants were half as numerous as those similar to the hybrids of the first generation. Tallness and dwarfness thus form a pair of characters which remain distinct or segregated in inheritance. A plant is endowed with one or other quality. By crossing plants these characters can be distributed with mathematical regularity among the offspring, while from the hybrids, plants can be obtained which breed true as regards either of these characters. Mendel demonstrated that six other pairs of characters were distributed in the same way in hybrid peas. In the cases investigated by Mendel the hybrid has the same appearance as one of the parents, so that dominance enters largely into the phenomena. Later studies on other species have shown that the hybrid may differ from both parents or be intermediate between them.

The behaviour noted in peas by Mendel, has been tested over a large series of plants and animals. A great number of studies have been made with insects and these have revealed that the distribution of sex in some species occurs in Mendelian proportions. In the case of man Mendelian inheritance has been followed in some series of abnormalities, as in polydactylism and in amblyopia.

The importance of the discovery is evident from the revolution that it has occasioned in the practical breeding of animals and plants. In a few generations it is possible to obtain any desired combination of qualities in a new variety. In the same time any quality that is not suitable, can be dropped from the variety and replaced by another quality. In this

way hundreds of new wheats are produced, to be tested as to their usefulness in different conditions. Not only has the discovery been of value in heightening economic production, but it has given an impetus to the study of evolution. It has provided an experimental method by which the problem of evolution can be investigated. A group of social reformers are eager to apply these principles to human society and by means of the "eugenics" movement utilize these observations to improve mankind.

---

#### INFANTS' FOOD.

---

In the current issue of *The South Australian Government Gazette* the Executive Council publish a new Regulation dealing with infants' foods under the *Food and Drugs Act, 1908*. This regulation has apparently been introduced to secure uniformity with the other States and with the Federal Department of Trades and Customs. We have pointed out on more than one occasion that the standard adopted is a purely artificial one. According to the Regulation, any food which "does not conform approximately in proportional composition to human milk" shall bear a label with the words: "This food should not be given to infants under the age of six months, except under medical direction." It must be assumed that the Executive Council, in adopting the Regulation, were aware of its significance. It would be interesting to learn from the Executive Council what the proportional composition of human milk is.

---

#### THE NEUTRALIZATION OF IMMUNE BODIES IN PNEUMONIA.

---

Twelve years ago Bail attempted to explain the failure of certain immune bodies to act in the course of an infection, by assuming that bacteria secreted a substance, which he called "aggressin," during their growth. These aggressins were supposed to neutralize the antibodies produced by an infecting organism. Thus, agglutination and phagocytosis are supposed to be inhibited by aggressins, unless anti-aggressins are present to counteract the effect of the aggressins. This view did not meet with universal approval. Wassermann and Citron suggested that the phenomena to which Bail referred, were produced by the interaction between the dissociated and dissolved bacterial substance and the antibodies themselves. They held the view that the antibodies were prevented from exerting a protective action



in the infected body, because of this anchoring to the bacterial protein. Although a great deal of experimental work has been done in connexion with this subject and many facts have been brought to light, it is still uncertain why sterile, filtered, inflammatory exudates have the power to modify the course of an infection. With a view to further elucidation, Rufus Cole has made some highly interesting observations on the inhibition of agglutination in pneumonia.<sup>1</sup> In the first place he found that while the blood of a person suffering from pneumonia with empyæma possessed well-marked protective and agglutinating properties, the pleural effusion had no such powers. The empyæma fluid, after having been freed of bacteria, was capable of inhibiting the agglutination action of an immune serum *in vitro*. The addition of empyæma fluid to the immune serum destroyed its protective power in mice against a lethal infection with pneumococci. Further experimentation revealed the fact that several sterile serous fluids aspirated from the chest of persons suffering from pneumonia, did not exercise this power. In experimentally produced septicæmia, the blood also possessed the power of inhibiting protective and agglutinating properties of an immune serum. He discovered an interesting phenomenon concerning the appearance of agglutinins in response to the injection of immune sera. In a normal rabbit, agglutinins appeared within a few minutes of the injection, but in an infected animal, very slight agglutinating power of the blood developed or it was altogether absent. This power, when present, disappeared rapidly. He then extended his observations to human patients with pneumonia. The blood was tested for its agglutinating power at the time of each injection of anti-pneumococcal serum and five minutes later. A close study of the results obtained led him to conclude that the failure of the immune serum to allay the symptoms and to reduce the fever is due to the neutralization of the antibodies by some soluble substance. This substance is present in large quantities in empyæma fluid. When the infection is severe, he assumes that these bodies are present in large quantities in the blood. The administration of anti-pneumococcal serum in these cases does not raise the agglutination titre materially at first, until the soluble, neutralizing substances present in the blood, have been claimed and an excess of immune body has been given. He deduces from these considerations that in all severe pneumonia infections, anti-pneumococcal serum should be given early and in large doses. The explanation, as far as it goes, is probably correct. Cole, however, does not attempt to trace these substances to their source. It will, however, be noted that the neutralizing power during a severe infection is considerable and that this power is presumably possessed by the fluid of the exudation and by the fluid portion of the blood. It is therefore more probable that it is derived from the presence of a dissolved product of dissociated bacteria than from any hypothetical secretion of the bacteria.

<sup>1</sup> The Journal of Experimental Medicine, October 1, 1917.

#### A RAT EPIZOÖTIC ON BOARD SHIP.

Many attempts have been made during the past few years to discover an efficient virus which would spread rapidly among rats and produce a high mortality, without endangering other animals and man. The success attending these trials has varied in different countries and at different times. It cannot be held that the artificial introduction of a rat epizootic has solved the problem of the rat pest up to the present. It is therefore worthy of more than passing note that an outbreak of a fatal rat epizootic has been studied in Bristol by Drs. D. S. Davies and J. C. Heaven and Professor I. Walker Hall.<sup>1</sup> A ship arrived from Buenos Ayres in June of this year, and when the hatches were opened several dead rats were discovered. In all, 438 dead rats were found. Besides the dead rats, 38 living rats were caught. A thorough examination of the rats that were not decomposed, was carried out. In all cases the pathological changes found included extensive pleural and peritoneal effusions, general hyperæmia, subcutaneous and subserous oedema, hæmorrhages into the lungs, glands and subserous spaces, granular changes in the liver and small abscesses in the spleen and liver. Gram-negative rods and Gram-positive spore-bearing rods were found on bacteriological examination. No trypanosomes or other protozoa were discovered. The bacteria found were carefully studied. A fatal illness characterized by the pathological changes described, was produced in healthy rats and mice by inoculation with cultures of the Gram-negative bacillus. The organism is stated to be a member of the Salmonella group, closely allied to the *Bacillus aertrycke vel suipestifer*, type 1. The blood of an infected rat failed to agglutinate emulsions of *Bacillus paratyphus* A or B or a strain of *Bacillus aertrycke*, but a standard "aertrycke" serum agglutinated the infecting organism up to half the full titre of one group of organisms, and up to one-fifth of the full titre of a second sub-group of this organism. The Gram-positive rods proved to be non-pathogenic or but slightly pathogenic for rats. It probably belongs to the subtilis group.

#### THE ETIOLOGY OF IRITIS.

A discussion recently took place in the Section of Ophthalmology of the Royal Society of Medicine on the subject of the etiology and treatment of iritis. Various speakers attacked the problem according to the special investigation which they had conducted in connexion with this affection. All agreed that iritis was primarily caused by some form of infecting organism or its elaborated toxin. The rôle played by pyorrhœa was pressed prominently to the fore, as one speaker remarked, almost disproportionately. Syphilis was allotted but a minor place in the list of causative infections. Mr. Ernest Clarke insisted on the assumption that errors of refraction were localizing factors in the determination of an attack. These generalizations, however, do not appear to have thrown any light on how iritis is actually caused. It remained for Dr. C. E. Lakin to

<sup>1</sup> Public Health, August, 1917.

take up the subject from a scientific point of view and to offer an explanation, no doubt to some extent hypothetical, as to how the changes in the iris are brought about. He adduced abundant evidence to make out a good case against iritis being the result of a chemical poisoning. In other words he argued that a bacterial toxin had never been shown to give rise to an exudation of inflammatory nature. On the other hand there is much positive evidence of a bacterial invasion of the iris, and he is probably justified in assuming that the invasion is of the nature of an embolic process. He has shown, as others have shown before him, that the infection in iritis is usually in some distant tissue, be it a joint, the gums or the nasal cavities. The junction of the iris and the ciliary body forms the division between a highly vascularized and a relatively little vascularized tissue. At such a situation, we might expect a diminution of the available oxygen and a diminished resistance to invading organisms. Moreover, the blood supply to the iris is transmitted through an artery which is practically terminal. The branches of the anterior and posterior ciliary arteries converge toward the pupil and form an anastomotic circle. From this circle smaller vessels are given off, which eventually form a network around the pupil. It is readily understood how a minute embolism of this brushwork of vessels may lead to an inflammatory process, with consequent throwing out of an exudation. The presence of pyogenic organisms or of those bacteria which give rise to acute inflammatory reactions is very likely to be followed by a secondary embolic invasion of the bacteria into the ciliary vessels and the production of iritis. It is unnecessary to make wild guesses and to speak of "gouty" iritis, while so plausible an explanation is available. The evidence hitherto collected, would show that there must be some bacterial infection and that iritis cannot be produced by chemical irritants or poisons. It is possible that a chemical body may inflict a damage to the iris and thus prepare the way for an infection, but by itself it will not bring about the inflammatory reaction.

#### THE CARE OF CHILDREN BY THE STATE.

##### South Australia.

The annual report of the State Children's Council of South Australia for the year ending June 30, 1917, is a short document of twelve pages, containing a very considerable amount of information.

At the beginning of the year 1,769 children were under control. During the twelve months, 294 little ones came under the guardianship of the State, while 219 passed out of it, either as a result of death or with the efflux of time. There were thus 1,844 kept under the provisions of the State Children's Act on the last day of June, 1917. The total number of children in the various institutions was 243; there were 41 absconders at large, there were 12 with their guardians out of the State, and the remaining 1,548 were boarded out.

The reasons given for the new committals affect both guardians and children. Many of the children were received because they were neglected and under unfit guardianship, because they were destitute or without a home, or because they were neglected and illegitimate. Others were admitted because they were uncontrollable, habitually absent from school, neglected and associated with persons of bad repute, or because they had been found guilty of larceny, of being in unlawful possession, or were awaiting trial. Of the 294 children committed, 168 were boys and 126 girls.

Information is given in regard to the conduct of 868 children who had been discharged during the five years from July 1, 1912, to June 30, 1917. The number who were said to be doing well was 578, which represents 62.36% of the total number. Twenty-five of the children were discharged to their relatives while they were young, arrangements were made for seven to be adopted, and 546 were at work. In addition to those doing well, there were 61 of whom it was known that they were not doing well, and 229 about whom no information was available. It is stated that two of those not doing well were lunatics and one a mental defective.

The Council places on record the fact that 251 ex-wards of the State had enlisted for military service, and that the majority of them had gone to the front. Of these 251 boys, 27 had been killed in action, one had died of wounds and one had died of illness; 22 had been wounded, one had been injured, 15 had been ill, and three were missing and one was a prisoner of war. One of the wounded boys had won the military medal.

Information is appended concerning the number of children admitted, re-admitted and transferred to the Industrial School, and the number of those discharged to service on probation, to hospitals, to reformatories and to other institutions. Similar information is given in regard to the Reformatory for Girls at Redruth, the Reformatory for Protestant Boys at Magill, the Reformatory for Roman Catholic Boys at Brooklyn Park, the Probationary School for Girls at Fullerton and the Probationary School for Boys at Mount Barker.

The children placed out from the various institutions were employed as farmers, gardeners, chauffeurs, messengers, printers, etc., etc., in the case of boys, and as domestic servants in the case of girls. In other instances they were placed out on subsidy, on probation, or by adoption, or were transferred to the Home for Weak-minded Children, the Blind, Deaf and Dumb Institution, the Babies' Hospital or the Mental Hospital. There were 365 children at service, 805 at subsidy, 285 on probation, 88 adopted, four in hospitals, 19 in the Home for Weak-minded Children, four in the Mental Hospital, six in Estcourt House, four in the Blind, Deaf and Dumb Institution, two in the Babies' Hospital, five in a lying-in home, two on holiday, three apprenticed, and 41 absconders at large. In 569 cases a change of arrangement or termination of the custody was arranged for various reasons. These included, among other things, the unsuitability of the home, "mutual dissatisfaction," misconduct, ill-health and unsuitability of the child, etc. There were 217 transfers. The discharges included that of 123 children at the expiration of the term, and that of 88 children in response to petition. Eight deaths occurred, two from diphtheria, three from pneumonia (one following measles) and one each from cerebral hæmorrhage, gastro-enteritis and marasmus. A certain number of infants are kept under direct control of the Council. In past years there has been a high mortality among the children, and this has gradually decreased until, in the year under review, it was only 1.6%. The Council, recognizing the danger of herding babies together, have arranged to send the healthy ones to the Queen's Home, and to send the sick babies to the various hospitals.

The total number of licenses granted to foster mothers was 403. There were 470 children under supervision with licensed foster mothers, of whom 132 were under one year of age. Eight of these 470 died during the year. There were 1,815 children supervised in unlicensed homes, with 28 deaths. In 382 the children were discovered in these homes during the year.

Information is given in regard to the State Children's Advancement Fund, from which loans are made for the purpose of assisting in the education of the children, and of the Reward Fund, out of which small rewards are paid for good conduct.

The cost of the Department amounted to £37,344. This sum was reduced by a revenue of £4,147, leaving a net expenditure of £33,197. The cost per head per week of the children in the Industrial School was 12s. 0½d., in the reformatories, 39s. 3¼d., 20s. 0½d., and 7s. 9½d., in the probationary schools 8s. 10½d. and 9s. 0½d. The cost per head per week of the children placed out was 2s. 4½d. This included salaries, medical attendance, allowances and "contingencies."



## Abstracts from Current Medical Literature.

### OPHTHALMOLOGY.

#### (172) Bitemporal Hemioopia.

In a series of articles on bitemporal hemioopia, dealing with a careful and exhaustive study of 22 cases, H. M. Traquair discusses the progress of the field defect and of the scotoma, and examines the theories of the mechanism producing them (*Brit. Journ. Ophthalmol.*, April, May and June, 1917). He had already pointed out the order of involvement of the peripheral field; beginning first in the upper temporal quadrant, the defect extends to the lower temporal, next in order to the lower nasal, and finally to the upper nasal quadrant. In other words, the field is lost clock-wise for the right and counter-clock-wise for the left. That the upper nasal field is the last to remain is not admitted by all observers, but a study of the literature of 59 cases shows that, while in 34 cases there is no indication either way, in 17 there was definite retention of the upper nasal field, and in eight cases retention of the lower nasal field. When the upper nasal field was retained, it was definitely quadrant shaped; when the lower it was a mere irregular patch. The central changes may be non-scotomatous, or a definite scotoma. The former is really a defect of the peripheral type, which can only be shown by a very small object, necessitating a very small central field. The scotoma behaves like a small field within the field, being most dense in the upper temporal or first quadrant, and less dense in the second, third and fourth quadrants. In reviewing the anatomy of the chiasma, the author emphasizes the fact that it lies well behind and above the usually described position. The intracranial optic nerves average 13 mm. in length; they meet at the chiasma in an acute angle, and the plane of the nerves and chiasma inclines slightly upwards behind, leaving a space of from 5 to 10 mm. between it and the *diaphragma sellae*. Beneath the chiasma is the infundibulum. In the 22 cases acromegaly was present in nine; in three skiagraphic signs of tumour were present. In one there was a suppurating maxillary sinus. Several of the patients had syphilis, and in some cases the diagnosis was uncertain. Three theories have been advanced to explain the production of the field defects, *viz.*, pressure, traction and local intoxication. As objections to pressure and traction, it has been urged that the chiasma and its connexions can suffer much deformity without the production of much perimetric change, also that there is a want of relationship between the position of the tumour and the chiasma with the field changes present, and further the existence of typical field changes from a variety of causes. In some there is no tumour. In cases where central defects predominate, the fields resemble those of

retro-bulbar neuritis, and Fuchs has suggested that toxins in the inflammatory oedema surrounding the tumour have acted upon the pupillo-macular bundle in the chiasma. The causation of retro-bulbar neuritis is not clearly established, but many observers consider that absorption of toxin by the nerve from an orbital tumour or septic sinus is the best explanation. In regard to the chiasma from anatomical and other considerations, the problem is much more difficult. Direct infection by a periostitis may be a possible condition, but the most probable assumption is that chiasmal neuritis is set up by tumour toxins. The pressure in many cases, especially in the early stages, must be very slight, and operations often do very little in the way of diminishing the pressure, and yet they may be followed by great improvement. This may be explained by the local blood-letting and opening up and improving the sinus condition. The course of the field defects is best explained by the arrangement of the fibres in the chiasma. The crossed fibres lie over the whole chiasma, and are more vulnerable to any interference, hence the early defect in the temporal fields. The uncrossed fibres (supplying the nasal fields) bend inwards almost to the centre of the chiasma, and are more protected. In the later stages, when the space below the chiasma has been filled up, actual pressure and traction come into play and modify the typical field changes.

#### (173) Spring Catarrh.

According to T. Harrison Butler, spring catarrh occurs in 1 in 10,000 eye cases (*British Journ. Ophthalmol.*, July, 1917). There is a constant presence of a large number of eosinophile cells in the conjunctival secretion, a fact which distinguishes the condition from some forms of phlyctenular conjunctivitis. It appears in three forms: the palpebral, the circum-corneal, and the mixed. In the palpebral form the tarsus is covered with a regular tessellation; unlike trachoma it subsides without scarring. In England the circum-corneal elevations never invade the central portion of the cornea, but this does not apply in the East. The conjunctiva has a peculiar milky appearance, which is characteristic. Until radium was used, these cases were not affected by treatment, but with radium the disease rapidly improves, and eventually disappears, especially in the palpebral form. The author has treated two cases successfully.

#### (174) Ocular Anaphylaxis.

Alan C. Woods has prepared a pigment emulsion from the uvea which can be utilized in perfusion. He considers that it is of paramount importance to determine which constituent of the uvea produces anaphylactic reactions (*Arch. of Ophthalmol.*, July, 1917). (1) Dogs sensitized by intraperitoneal injections of cow's uveal pigment were transfused with defibrinated blood and cow's uveal pigment. All three dogs

gave extreme reaction, namely, contraction of the pupil and retinal hæmorrhages. (2) Dogs sensitized with dog's uveal pigment, when transfused with blood and dog's uveal pigment, gave prompt positive reactions. He therefore claims that uveal tissue possesses antigenic properties in the homologous animal, and that it is the pigment which is responsible for the phenomena. To explain sympathetic ophthalmitis as an anaphylactic reaction, it is necessary to prove that the pigment responsible is organ specific and not species specific. If uveal pigment absorbed from the excited eye produces hypersensibility of the second eye, intoxication of the second eye must be produced by uveal tissue alone, and not by other body protein, otherwise there would be no gain in removing the eye. If the pigment possessed species specificity, the blood serum would theoretically produce intoxication. Dogs sensitized to one species pigment and subsequently transfused with pigment of another species gave positive results, thus proving organ specificity. Dogs sensitized with cow's whole uveal emulsion and transfused by other cow's protein gave positive reaction, but dogs sensitized to pigment alone and transfused with other cow's protein gave no reaction. Pigment is therefore not species specific. The findings confirm Elsching's findings, and give a definite, scientific basis to the anaphylactic theory of sympathetic ophthalmia.

#### (175) Tendo-Muscle Lengthening.

Holbrook Lowell points out that the longest ocular muscle tendon is that of the external rectus, approximately 8.8 mm., and the shortest that of the internal rectus, 3.7 mm. (*Archives Ophthalmol.*, May, 1917). Of the three transverse cuts used to lengthen the internal rectus, one may have been in the tendon, but two were in the muscle. Hence his good results. To facilitate the manoeuvre in so restricted a field, the author has invented a double-jawed fixation forceps with 4 mm. of space between the jaws. With this the incisions may be made deliberately, two at the far end of the forceps, and a central one behind. As the jaws make an angle of 7.35° with the handle, this can be done with an angle scissors.

### LARYNGOLOGY AND OTOTOLOGY.

#### (176) Stammering.

The dextro-sinistralis theory of stammering is discussed by E. Tompkin in the August 1917 number of the *Laryngoscope*. At the outset he deprecates the loose and general employment of the term "speech defects," when referring to one or other of such completely different conditions as aphasia, stammering and lisping. The first indicates loss of speech, a non-spasmodic condition almost invariably due to an organic disturbance of the brain, frequent in old age; the next is a convulsive, abortive effort to say a word that is known (not the loss of a word as in aphasia), in which no



lesion or structural defect has ever been demonstrated, and which originates almost exclusively in childhood; the third is a defect in pronunciation known to be due to carelessness, defective teaching or hearing, or structural defects of the peripheral vocal organs, and in which no central lesion has been found. Again, stammering should not be confused with stuttering which indicates needless repetition, a non-spasmodic habit, generally of childhood, and leads to stammering. As to the theory that training the right hand of the left-handed child produces stammering, owing to the supposed connexion between the speech-centre and the area of motor control of the dextrous arm being so intimate that disturbance of the function of one involves that of the other, the author holds that the reasoning, even more than the observations, of the advocates fails to prove the theory. Granting that an organic lesion, extensive enough to involve both centres, manifests itself in disabilities of the corresponding peripheral organs, there is no proof that a narrowly localized disturbance of one centre would be transmitted to the other centre and then outwards. The theorists assume further that interference with the ability of one peripheral member, the hand, will transmit an effect inward to its motor centre, from that to the other centre and then outward to the peripheral organs of the other, the articulatory apparatus. The effect on the brain in such a case would be pathological, and the result would be not stammering, but aphasia, the only speech defect known to result from an organic cerebral lesion. In correcting left-handedness no interference with the ability of the left hand is effected. Treatment only lessens its rate of education, and even when it is cut off, no aphasia occurs. The period of acquisition of stammering is generally stated to be from 3 to 12 years, and left-handedness is corrected within that period. Coincidence of appearance of stammering and correction of left-handedness is, therefore, unavoidable. Similarly the outgrowth of stammering is demonstrable, and the reversion to left-handedness frequent. Both would necessarily occur, at times, in conjunction. Even if the assumption be founded on fact of a greater prevalence of stammering and lisping among sinistrals and mentally-deficient children than in other children, the cause would probably be carelessness on the part of the parents, either through inclination or deficient mentality, in failing to correct these habits at a time when they are readily capable of correction. It is to be remembered that left-handedness is very frequent in childhood, that stammering generally arises from the simple habit of stuttering or the practice of imitating stammering, and that much lisping is habitual and further that in all three, careful parents generally succeed in discouraging and correcting the fault. Hence there is no need to impute a mysterious connexion between these characteristics, until it has been shown

that the evident connexion, viz., the lack of correction of all three, is inadequate.

#### (177) Internal Secretions in Oto-Laryngology.

In atrophic rhinitis, hyperplastic ethmoiditis, oto-sclerosis, septal deviations with excrescences, and some other conditions, the pathological changes found are held by Joseph C. Beck to be analogous to those occurring in osteomalacia, acromegaly and other conditions known to be due to disturbance in the ductless glands, and suggests that they have a similar aetiology, and call for similar treatment (*Laryngoscope*, May, 1917). The hypophysis and adrenals are known to have a specific influence on bone growth, and the thymus also a nutritional influence. Marked changes in these glands are secondary to some infective condition elsewhere—tonsillar, dental, intestinal, etc., resulting in hypo-, hyper-, or altered secretion, and leading to pathological changes in the bony framework,—a process of rarefaction. In atrophic rhinitis, which generally occurs in girls and women with small thyroids, the bony turbinates are affected, the mucosa over them undergoes a secondary degeneration, with metaplasia of the epithelium, followed by a low grade infection by a large variety of organisms, among them the so-called specific foetid bacillus of *ozena*. The primary infective focus is probably intestinal. In hyperplastic ethmoiditis, due probably to a hyposecretion secondary to an intestinal infection, the bone becomes spongy and the mucosa sooner or later becomes polypoid. Bony excrescences of the septum also show this spongification. In oto-sclerosis the bone condition resembles that in osteomalacia, *arthritis deformans* and bones in the early months of pregnancy. In all the above conditions striking improvement, in some cases, has followed the administration of adrenal, pituitary or thymus extracts, either singly or combined, and with or without bacterial vaccines. Removal of the primary infective focus is necessary to effect a permanent cure, e.g., tonsillectomy has been found to be followed by lasting relief of the headaches and ear noises as well as the other symptoms in exophthalmic goitre. The marked laryngeal symptoms and appearance of cord hypertrophy in myxoedema have readily resolved before treatment with appropriate gland extract. The lymphatic dyscrasias and occasional pressure symptoms on the trachea in *status lymphaticus* are attributable to disharmony in the thymus secretion. Enlarged tonsils and adenoids, when coexisting, should if possible not be removed until the child is three years of age, as a lessened resistance of the tissues of the body generally and mental backwardness have been known to follow early operations.

#### (178) Malposition of Cervical Vertebrae.

A case of rotational displacement of the axis through about 23°, causing a

projection on the posterior nasopharyngeal wall resembling a bony tumour, is reported by Edgar F. Cyriax (*Journ. Laryng. Rhin. Otolaryng.*, August, 1917). A young woman, *act.* 20, complained of recurring sore throat and poor resonance in speaking and singing. Her neck ached severely when she held a violin. There was no history of traumatism. Visual and digital examination disclosed a solid immovable protuberance, which a skiagraph showed to be one of the transverse processes of the axis rotated forward. The 3rd, 4th, and 5th cervical vertebrae were also rotated in a decreasing ratio. Passive cervical adjustment, in fifteen treatments of 8 to 10 minutes each, extending over three weeks, effectually reduced the displacement without pain or discomfort during or after the manipulations. The earlier treatments consisted in preliminary *pétrissage* and stretching to induce relaxation of cervical muscles and ligaments, followed by rotary movements in the direction of limitation of movement. The later treatments were directed towards improving the circulation in the cervical muscles by passive elongation in every direction. The neck-ache rapidly disappeared, the head could soon be moved through 90° to either side, and the voice resonance markedly improved, especially in singing. When the patient was seen 20 months later the improvement had been fully maintained.

#### (179) All-skin Incision for Septal Resection.

To avoid the scabbing and dryness consequent on incision through the mucosa, C. E. Purcell recommends for all submucous septal work an all-skin incision (*Laryngoscope*, August, 1917). No anaesthetic is used for the skin. The knife is entered on the floor of the nose opposite the attachment of the inferior turbinate, and carried forward to the tip of the nose, the incision being kept strictly in the cutaneous septum. In extreme anterior deflections the incision is begun near the junction of the inferior turbinate on the lateral wall. The deviser claims wholly satisfactory results for his method.

#### (180) Soft-Palate Adhesions.

Adhesions of the soft-palate to the posterior pharyngeal wall occur most commonly in the tertiary stage of syphilis, though it is relatively frequent in the hereditary form of that disorder. Complete adhesion is rare. Treatment consists in loosening or cutting through the adhesions, and taking measures to prevent re-adhesions and contractures. F. Hazlehurst (*Laryngoscope*, July, 1917) has secured a permanent patency of the naso-pharyngeal passage, after severing the adhesions, by suspending in the naso-pharynx a thin silver plate, 3 cm. square, with rounded corners, by a silver wire, passing through the nose and secured to the cheek by adhesive plaster. The plate was removed after 18 days.

## British Medical Association News.

## SCIENTIFIC.

A meeting of the Western Australian Branch was held at the Perth Public Hospital on August 15, 1917, Dr. R. C. E. Atkinson, the Vice-President, in the chair.

Dr. Dixie P. Clement exhibited a patient in the wards of the hospital who was suffering from cerebral hæmorrhage. The condition of the patient had been very serious at the time of admission, but he had improved very much. The only sign left of the hæmorrhage was a motor aphasia.

Dr. M. K. Moss showed a young girl who was suffering from a swelling of the left arm in the neighbourhood of the shoulder joint. The swelling had been present for two years, but was increasing in size. There were apparently similar swellings of smaller dimensions in both legs and in the other arm. The Wassermann test was negative.

Dr. W. Trethowan was of opinion that the case was one of multiple *osteo chondromata*. The skiagrams, however, revealed a uniform enlargement of the bone of the left arm. He thought that it was probably becoming sarcomatous.

Dr. H. J. Lotz thought that it was a case of exostosis. It was usual to get tumours in other bones in cases of exostosis.

Dr. F. A. Hadley was inclined to agree with Dr. Trethowan. He suggested that a small piece should be removed for examination.

Dr. Moss also exhibited his apparatus for administering warm ether or chloroform for anæsthetic purposes. He pointed out that he had made various improvements since he had exhibited the apparatus for the first time. He explained that the bottles were made of metal with air-tight screw tops. The inlet air pipes were sealed at the bottom and perforated at the sides. By these means a more rapid and stronger concentration of the vapour could be produced. The aqueous vapour froze in the bottom of the ether when pumped violently. For this reason a warming element had been introduced. The switch permitted of three degrees of heat. As a rule the lowest sufficed. He aimed at keeping the air in the ether bottle at the same temperature as the outside air, in order to insure an even concentration. A small foot pump or bellows was used. This was worked by slight extension and flexion of the foot. Dr. Moss explained that he usually induced anæsthesia with chloroform, and then turned on the ether taps, at the same time turning off the chloroform taps. He did not claim originality for the apparatus. The idea emanated from an article which had appeared in the *British Medical Journal*; the apparatus described in this article had been modified and elaborated. The apparatus was the product of local plumbers, gas-fitters and electricians. The first apparatus made consisted of pickle bottles and rubber tubing which tied itself into Gordian knots. In its improved form, it might be regarded as fool-proof.

Dr. C. H. Shearman exhibited a specimen for Dr. T. Ambrose of *carcinoma cervicis uteri*. The uterus had been removed from a patient aged 43 years, a nullipara. The only symptom the patient had complained of had been hæmor-

rhage, which had occurred from time to time for about four weeks. There had been a mushroom spread of the growth in all directions. The tumour was evidently a rapidly growing neoplasm. It had been removed by Wertheim's operation, the vagina being stripped well down, and the cellular tissue removed as far as possible.

The Secretary read a paper by Dr. T. Ambrose on "The Treatment of Pott's Disease by Autogenous Tibial Bone Grafts (Albee's Operation)." (See page 413).

He also showed two patients on whom Dr. Ambrose had performed the operation described. One was a child who had been operated on seven weeks before, and the second a woman who had been operated on a few months before. The results in both cases had apparently been good.

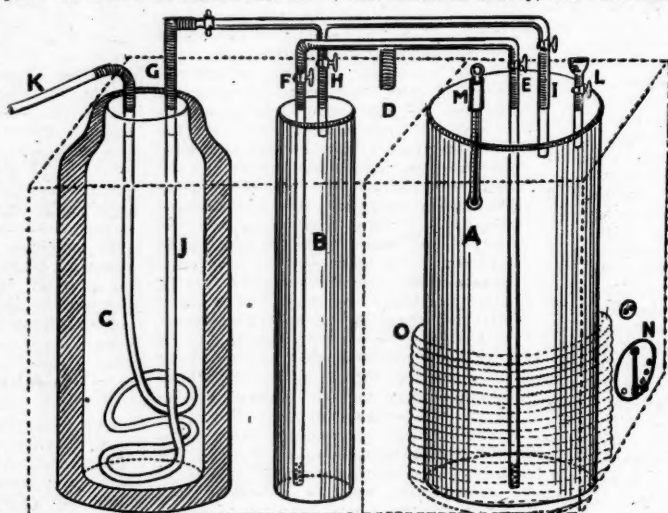
## THE HEALTH OF SCHOOL CHILDREN IN SOUTH AUSTRALIA.

The Annual Report of the Medical Inspector of Schools, Dr. Gertrude Halley, has been issued as an appendix to the Report of the Minister of Education of South Australia for the year 1916.

During the course of the year, 225 visits were paid for the purpose of examining the children and controlling the general hygienic conditions of the school. The total number of children examined was 2,646. Dr. Halley points out that she was unable to examine as many children as in the previous year, owing to much time being absorbed in dealing with outbreaks of infective disease, and in supplying information to the Central Board of Health. There is, in our opinion, no need for regret that one medical officer should not examine more than 2,650 children, since the reliability of the results of the examinations must diminish when their number is

increased. She found defects of sight and hearing or physical defects in the throat and elsewhere of sufficient degree to interfere with the education of the children in 21.15% of the children examined. In addition, 1,897 children had dental defects necessitating treatment. Of these, 490 had teeth in sufficiently advanced a condition of decay to imperil the health of their owners. She pleads for the establishment of dental clinics where the teeth of the children may be adequately dealt with. Lateral or dorsal curvature of the spine was discovered in 394 cases. This represents 14.88% of the children examined. The frequency of this condition is traced to defective lighting and unsuitable desks in two of the schools visited. Dr. Halley records that a marked improvement has been effected in the cleanliness of the children, and that pediculi were present in the hair of less than 1% of those examined.

Certain infective diseases have been very prevalent in the State during the course of the year under review. There were 2,947 cases of morbilli, 1,289 cases of pertussis, 576 cases of diphtheria, and 120 cases of scarlet fever. In addition, there were cases of enteric fever, meningitis, varicella, parotitis, erysipelas, ringworm and tonsillitis aggregating 564. During the course of the year, the Nurse and Health Inspector disinfected 259 schools or school rooms, while 141 school rooms were disinfected under the



- A. Ether wash bottle.
- B. Chloroform wash bottle.
- C. Thermos flask with hot water.
- D. Inlet air pipe from pump.
- E. Inlet air pipe to ether.
- F. Inlet air pipe to chloroform.
- G. Pipe, carrying gas to be warmed, screwing to outlet pipe.
- H. Outlet for air and chloroform mixture.
- I. Outlet for air and ether mixture.
- J. Rubber tube running through thermos for heating the mixture.
- K. Inlet air pipe from pump.
- L. Tap and pipe for refilling ether during operation.
- M. Hollow pipe sealed below to carry thermometer.
- N. Switch to regulate heat of ether.
- O. Warming element.



supervision of the teachers. In all cases in which the incubation period had not been completed since the last attendance at school of a child who was suffering from diphtheria, scarlatina or meningitis, the room was closed until disinfection had been carried out by an officer of the Department.

An outbreak of diphtheria occurred in the metropolis during the autumn of the year. Dr. Halley visited each of the schools where a case of diphtheria had arisen and excluded 2,657 children from the classes as suspects. Bacteriological examination was carried out, and the children were sent home with strict injunctions that they were not to visit other children, nor to go to picture-shows or other public places, until the result of the examination was made known. This had the effect of checking the epidemic. Similar means were adopted during an outbreak of the same disease at Port Pirie. At Maitland a school was closed during an epidemic as a result of the action of the Central Board of Health. Dr. Halley caused bacteriological examinations of the faucial mucus of all the children to be carried out. In no case were diphtheria bacilli found. She emphasizes this point to demonstrate how useless it was to keep the school closed.

A reference is also made to the practice of attempting disinfection with hot water, soap and soda, after a case of pertussis or morbilli has occurred. The Central Board of Health has given instructions for this to be carried out under the supervision of the head teacher. Dr. Halley quotes the opinions of some of the leading experts in public health and school hygiene in support of her contention that these precautions have no actual value. She points out that the virus of measles is not air-borne, and that it probably dies out on inanimate objects in less than twenty-four hours after it has left its host. Morbilli, pertussis and the majority of other communicable diseases of childhood are spread by direct contact. She, therefore, regards the picture-show, the concert-hall and other places of congregation, where children are in close association one with another, as important factors in the spread of these diseases. She condemns the picture-show, not only from the moral point of view, but also for hygienic reasons. Under ordinary circumstances, these places have to be darkened, and consequently ventilation is absent. She calls attention to the fact that the great increase in the frequency of diphtheria has occurred in a period corresponding with the growth of picture palaces.

The Health Act at present in force became law nearly 20 years ago. Since that time a considerable advance has been made in the study of the epidemiology and prevention of infective diseases. This Act provides for the exclusion from school of children who have been in contact with patients in the early stages of pertussis and morbilli. There is no exemption for a child who is immune on account of having had a previous attack. Moreover, it has been shown that these diseases are not conveyed by third persons, and consequently, as long as the contacts remain in good health, they are incapable of spreading the disease. Dr. Halley therefore arrives at the only rational conclusion, that this provision entails a useless waste of time to the scholars, and an equally useless waste of money to the Department. The provision also applies to the teachers. This means that if a child living in the teacher's house develops measles or whooping cough, that teacher is prevented from attending the school and carrying out his or her duties for a time corresponding to the incubation period of the disease. The Act further provides that patients and home contacts shall not be readmitted to school, until they have a doctor's certificate that they are free from infection, and that their clothes have been disinfected. The difficulty associated with the carrying out of these precautions may be considerable. In mild cases the parents frequently do not call in a doctor at all, and in the country the doctor may live many miles away, in which case the expense entailed in procuring the necessary certificate may be beyond the parents' means.

Dr. Halley pleads for the amendment of the Health Act, for the abolition of the futile practice of closing the schools as a means of stemming epidemics, and for the transference of the control of infective diseases in schools to the Medical Branch of the Education Department.

Two short chapters are devoted to lectures to students and the Child Welfare Exhibition. Under the former caption reference is made to a report on the mental state of the elder physically defective girls, inmates of the Fullarton Refuge. In the report it is urged that these girls should be segregated in cottage homes, and should not be allowed to go to situations. In connexion with the second subject, brief details of the part taken by the Department at the Child Welfare Exhibition are given.

A résumé of the more important decisions arrived at at the Conference of School Medical Officers held in Sydney in December, 1916. She expresses regret that a uniform system of school medical examination for the whole Commonwealth was not decided upon. She points out that some of the children in New South Wales and Tasmania are not undressed. This would lead to the failure to discover curvature of the spine, evidences of rickets in the chest, and some pulmonary and cardiac affections. She states that the undressing of the children had not been objected to in South Australia. It carried with it a further advantage that the medical officer gained a reliable indication of the cleanliness of the child.

In conclusion, she points out that it is impossible for one medical officer to examine all the 71,000 children in the State. An endeavour has been made to obtain a second medical officer, but so far without avail.

## Public Health.

### NEW SOUTH WALES.

The following notifications have been received by the Department of Public Health, New South Wales, during the week ending November 3, 1917:—

	Metropolitan District.		Hunter River District.		Rest of State.		Total.	
	Cs.	Dths.	Cs.	Dths.	Cs.	Dths.	Cs.	Dths.
Enteric Fever	4	0	0	0	4	0	8	0
Scarlatina	3	0	0	0	3	0	6	0
Diphtheria	20	1	3	1	31	0	54	2
C'bro-Spl. Menin.	1	0	0	0	0	0	1	0
*Pul. Tuberculosis	16	11	1	0	0	0	17	11

\* Notifiable only in the Metropolitan and Hunter River Districts, and, since October 2, 1916, in the Blue Mountain Shire and Katoomba.

### WESTERN AUSTRALIA.

The following notifications have been received by the Department of Public Health, Western Australia, during the week ending October 20, 1917:—

	Metropolitan Cases.		Rest of State Cases.		Totals Cases.	
	Cases.	Cases.	Cases.	Cases.	Cases.	Cases.
Enteric Fever	3	0	0	0	3	0
Diphtheria	7	7	7	7	14	14
Scarlatina	2	2	2	2	4	4
Pulmonary Tuberculosis	0	4	4	4	4	4
Erysipelas	1	1	1	1	2	2
"Low Fever"	0	1	1	1	1	1
Anthrax	0	1	1	1	1	1

### QUEENSLAND.

The following notifications have been received by the Department of Public Health, Queensland, during the week ending November 3, 1917:—

Disease.	No. of Cases.	
Diphtheria	1	19
Scarlatina	1	1
Pulmonary Tuberculosis	13	13
Erysipelas	2	2
Puerperal Fever	1	1
Enteric Fever	10	10
Bilharziosis	1	1
Cerebro-spinal Meningitis	1	1
Poliomyelitis	2	2



## VICTORIA.

The following notifications have been received by the Department of Public Health, Victoria, during the week ending November 4, 1917:—

	Metro- politan. Ca. Dths.	Rest of State. Ca. Dths.	Total. Ca. Dths.
Diphtheria .. .. .	35 0 ..	14 0 ..	49 0
Scarlatina .. .. .	33 1 ..	18 0 ..	51 1
Enteric Fever .. ..	1 0 ..	3 0 ..	4 0
Pulmonary Tuberculosis	14 5 ..	10 0 ..	24 5
C'bro-spinal Meningitis	1 — ..	0 — ..	1 —

## SOUTH AUSTRALIA.

The following notifications have been received by the Central Board of Health, Adelaide, during the week ending October 27, 1917:—

	Adelaide. Ca. Dths.	Rest of State. Ca. Dths.	Totals. Ca. Dths.
Diphtheria .. .. .	1 1 ..	18 1 ..	19 2
Pul. Tuberculosis ..	1 4 ..	8 8 ..	9 12
Pertussis .. .. .	0 0 ..	8 0 ..	8 0
Scarlatina .. .. .	0 0 ..	4 0 ..	4 0
Enteric Fever .. ..	0 0 ..	3 0 ..	3 0
C'bro-spinal Meningitis	0 0 ..	2 0 ..	2 0
Favus .. .. .	0 0 ..	1 0 ..	1 0

## NEW ZEALAND.

The following notifications have been received by the Chief Health Officer, Department of Public Health, Hospitals and Charitable Aid, New Zealand, for the four weeks ending October 15, 1917:—

Disease.	No. of Cases.
Scarlatina .. .. .	157
Diphtheria .. .. .	413
Enteric Fever .. ..	34
Pulmonary Tuberculosis	188
Cerebro-spinal Meningitis	9
Pollomylitis .. .. .	10
Puerperal Septicæmia ..	5
Erysipelas .. .. .	17
Ophthalmia Neonatorum	3
Tetanus .. .. .	1
Hydatids .. .. .	3

## THE HEALTH OF WESTERN AUSTRALIA.

Dr. Everitt Atkinson, the Commissioner of Public Health and Principal Medical Officer of Western Australia, has issued his report for the year 1915, on the work of the Medical, Health, Factories and Early Closing Combined Departments. The report, together with the appendices, covers 72 pages of printed material, exclusive of illustrations and graphs. For a considerable portion of the period covered by the report, Dr. James W. Hope was still Commissioner of Public Health. The author begins his report with a tribute to his predecessor.

## Medical Work.

The Department has control of the maintenance of Government Hospitals, of the Wooroloo Sanatorium and Farm, and of the District Medical Officers. The institutions dealt with by the Department number 54. The Perth and the Fremantle Hospitals are governed in accordance with the provisions of the "Hospital Act" of 1904. There are 21 hospitals under direct departmental control, and 29 managed by local committees. The expenditure on the Medical Department amounted to £91,698, including £37,009 granted to public and assisted hospitals, £22,199 paid in salaries to District Medical Officers and the staffs of hospitals, and £18,919 spent for the maintenance of Government hospitals. The cost of upkeep of the Wooroloo Sanatorium was £5,933, and of the Farm and Engineering Works £3,249, making £9,172 in all. In addition, £467 was paid in grants to District Maternity Nurses and £2,934 in salaries at the Head Office. The remainder of the expenditure, amounting to a little under £1,000, is grouped under the heading "incidental."

## Hospitals.

The cost of treatment per patient in the Government Hospitals averaged 6s. 10½d. per day, as compared with 7s. 9½d.

in 1914. At the Fremantle Public Hospital, the cost was 4s. 9d. in 1915, and 6s. 3½d. in 1914. In all other hospitals the cost of treatment was higher in 1915 than in 1914. At the Perth Public Hospital it was 6s. 5½d., at the Children's Hospital it was 7s. 10½d., and at the assisted hospitals it £1 4s. 4½d.

Various other details are given concerning the size, activities and extent of Government assistance in a number of the hospitals. Dr. Atkinson calls attention to the grave difficulties arising from the shortage of medical officers of hospitals, involving, as it has done, the necessity for patience and sacrifice on the part of civil sufferers. The Department determined to place no obstacle in the way of any medical man or nurse offering him or herself for military duty. In many out-back districts the needs of the civil population have met met, at great personal inconvenience, pecuniary loss and disregard of health, of both District Medical Officers and District Nurses.

## Infective Diseases.

## Tuberculosis.

The number of cases of pulmonary tuberculosis notified during 1915 was 336, as compared with 353 in 1914. There was a slight increase in the number of deaths, namely, 233, as compared with 229. On the other hand, the increase in the number of deaths from other forms of tuberculosis was very considerable. The number of deaths in 1914 was 17, and in 1915 34. The death-rate per 1,000 of population from all forms of tuberculosis was 0.827, as compared with 0.758 in 1914. In 1900 the rate was 0.88, in 1904 it was 0.9, and in 1905 it was 0.71. Dr. Atkinson anticipates that additional facilities for treatment in the immediate future will effect a great reduction in the number of deaths of those suffering from pulmonary tuberculosis. He calls attention to the higher death-rate among males than among females. He indicates that remedial measures can be summarized as follows: (1) The earliest possible detection and treatment of every case by medical practitioners; (2) the observance by the patients of precautionary measures; (3) the segregation in sanatoria of those unable or unwilling to observe these precautions, and (4) the maintenance of sound sanitation and the observance of the rules of personal hygiene. He holds the opinion that in the average early case there is every chance of arrest of the disease by properly applied treatment. He has reason to believe that the disease is not on the increase, but that the work of the Department in its efforts to prevent infection and re-infection, the part played by the visiting nurses, and the results of institutional treatment at Wooroloo must have their effect. The nurses were first appointed at the beginning of 1914. Their duties include a regular following-up of the cases. In addition to giving advice in regard to the most beneficial habits of life, they act as the link between the Health Department and the patients.

Both Dr. Atkinson and Dr. Robert M. Mitchell, the Tuberculosis Officer and Chief Resident Medical Officer of the State Sanatorium at Wooroloo, plead for a proper selection of cases for sanatorium treatment. It is pointed out that those who condemn sanatoria, are the first to send unsuitable, advanced cases to the institution, and to blame the system for failing to effect wonders. The total number of patients treated during the year was 315. Of these, 160 were still in the Sanatorium on the last day of the year. The number of those discharged was 110, and no less than 45 died. No information is given of the stage of disease of either of the persons discharged or of those who died, nor is any attempt made to distinguish between arrest of disease, improvement of the patient's condition and failure. In regard to treatment, Dr. Mitchell states that the tuberculous are still on their trial, and that he is pleased to note that there is a general condemnation of the routine use of these preparations.

## Venereal Disease.

The report covers the period immediately preceding the introduction of the Public Health Amendment Act, with its drastic provisions for the control of venereal disease. The author is therefore speculative in his treatment of this subject, and indulges in an interesting philosophical *couserie* on the various problems involved.

At the two lock hospitals, provision is made for the treatment of venereal disease in male and in female aborigines. At Bernier Island 15 male patients were admitted, in addition to 36 who were in the hospital on the first day

of the year. Nine patients were discharged, five died, and 37 were still under treatment on December 31, 1915. At Dorre Island, 39 females were admitted, in addition to 97 who were under treatment at the beginning of the year. Fourteen patients were discharged, 11 died, and 111 were still in hospital on the last day of the year.

#### Enteric Fever.

During the course of the year, 518 cases of enteric fever were notified. There were 46 deaths, and the case mortality was therefore 8.9%. The maximum number of cases occurred in March, and the minimum in August. The total number was 213 less than the total number notified in 1914, and is stated to be the lowest on record. The incidence of the disease represents 1.6 per 1,000 of population. The reduction was very marked in the metropolitan area, but was also seen in the western, central and eastern rural districts. In the north-north-western district alone there was an increase from eight cases to twelve. Dr. Atkinson states that, had the reduction taken place in the metropolitan areas exclusively, the improvement might have been ascribed to the installation of the water carriage system of sewage disposal. The improvement was marked in Perth and Kalgoorlie, while in Claremont, Fremantle, Leederville and Meekatharra there were more cases than in the preceding year. The number of cases recorded in 1912 throughout the whole State was nearly twice that of the notifications in 1915. On the other hand, the case mortality was higher in 1915 than in 1914.

#### Diphtheria.

While the incidence of enteric fever was markedly diminished, that of diphtheria was greatly increased. During 1915, 1,045 cases were notified, as compared with 785 in 1914. The greatest number of cases occurred in May, and the smallest in October. There were 38 deaths, and consequently the case mortality was 3.8%. In 1914 the case mortality was 4.17%. It appears that there was a marked increase in the disease at Kalgoorlie, no less than 208 cases having been notified in 1916, as compared with 57 in 1914. The increase was also apparent in Perth, Boulder, and several of the smaller townships. Dr. Atkinson calls attention to the difficulty in controlling carriers in the gold-fields district, owing to the distance from the central laboratory and the consequent drying of the mucus on the swabs removed for examination. We would venture to suggest that this difficulty might be overcome by placing a bacteriological incubator, which can be purchased at a small cost, in some official building at Kalgoorlie, and issuing the sterile swabs and serum slants from Perth. If no medical officer is available to examine the growths at Kalgoorlie, the tubes could be sent to Perth after 15 hours' incubation.

#### Scarlet Fever, Morbilli, etc.

The total number of cases of scarlet fever notified during the year was 55. There were no deaths. Dr. Atkinson calls attention to the fact that this disease has shown little tendency to spread in recent years, and that it has been extremely mild in character.

Morbilli is not notifiable in Western Australia. Twenty deaths from it occurred, as compared with six in 1914. By an unfortunate misprint, the columns have been transposed, the figures for 1915 being inserted under the heading 1914. Dr. Atkinson suggests that the increased mortality may be due to increased incidence. He points out that many cases have occurred among the troops at the various training camps, and that several persons have acquired epidemic cerebro-spinal meningitis during convalescence from measles. He holds that the disease is not to be regarded as one of a grave nature, although he admits that severe and frequently fatal complications occur. He considers that notification would be almost valueless.

There were 54 cases of erysipelas notified during the year and three deaths, two cases of malaria and no cases of dengue fever, although 26 occurred in 1914. Dengue appears to have been limited to the neighbourhood of Broome.

#### Other Infective Diseases.

There was a considerable reduction in the number of cases of beri-beri notified as occurring. In 1915 there were 41 cases, while in 1914 there were 109. Dr. Atkinson suggests that the reduction is due to the fact that fewer pearlers have been employed since the outbreak of war.

The number of deaths, however, has scarcely been reduced. In 1914 it was 14 and in 1915 13.

The number of deaths of children under two years of age from diarrhoea and enteritis was 207, as compared with 192 in 1914. Dr. Atkinson expresses surprise that a reduction similar to that noted in the case of enteric fever was not apparent. Since the aetiology of gastro-enteritis in infants and that of enteric fever are so dissimilar, we fail to understand why Dr. Atkinson should have arrived at this conclusion.

There were only seven deaths from pertussis, as compared with 20 during the previous year. Since this disease is not notifiable, it is impossible to ascertain whether the incidence of infection had decreased *pari passu* with the mortality.

The number of deaths ascribed to influenza was 25, as compared with 16 in 1914. Dr. Atkinson wisely calls attention to the loose manner in which conditions are diagnosed as influenza, and to the frequency with which organisms, such as the pneumococcus or *micrococcus catarrhalis*, are found in these affections.

While epidemic cerebro-spinal meningitis has occurred in more or less extensive epidemics throughout Australia, only three cases were notified in Western Australia. Dr. Atkinson suggests that the disease may have been introduced in one of five ways. Meningococcus carriers may have returned from Egypt. Soldiers temporarily on service in other States may have become carriers before returning to Western Australia. The infection may have been spread by troops from other States temporarily ashore in Western Australia, en route to Egypt. It may have been caused by deserters from troopships detained in Western Australia, and, lastly, civilian carriers from other States may have been responsible for its introduction. The first case occurred at Blackboy Hill Camp, while two civilians were also affected. The meningococcus was discovered in the mucus from the fauces of three persons who had been in contact with one or other of the patients. The clinical histories of the three cases are given.

Leprosy was found in a Chinaman working in a vegetable garden in one of the suburbs. The disease was of the maculo-anæsthetic type, and is supposed to have existed for about two years. The patient was promptly segregated. Typical acid-fast bacilli were found in the nasal secretion.

#### Public Health Activity.

During the course of the year, the Public Health Department expended £3,347 less than they expended in 1914. The total is given at £10,609. The sum of £1,187 was saved out of salaries as some of the members of the staff were absent on active service. The outbreak of variola at Bunbury in 1914 was responsible for a high expenditure under the heading of "Infectious Diseases and Land Quarantine." A saving was also effected under the heading of "Travelling and Transport," as a result of more economical arrangements and a smaller staff. While the expenditure was smaller, the revenue was greater, and consequently the net cost of the Public Health Department to the community was considerably less. Dr. Atkinson has calculated the actual net cost of the public health administration at 4.05 pence per head of the population, as compared with 7.24 pence in 1914.

There were 121 local health authorities, including 30 municipalities, 55 road boards and 35 local boards of health, as well as the Water Supply Department. The revenue of these local authorities amounted to £105,042, and the expenditure to £100,028. In three instances the local authority is insolvent as far as its health account is concerned. Dr. Atkinson urges that the obvious remedy, namely, to increase the health rate, should be taken without delay. He states that there is a tendency for these bodies to keep the expenditure down to the lowest figure, and to levy a low rate. He regards it as essential that provision should be made for adequate expenditure on sanitation and other health matters, and that a reserve should be kept to meet contingencies.

He adds a short chapter dealing with the relation between the civil and the military health organizations. In Western Australia, the Public Health Department has been called upon to supply a certain amount of anti-typhoid vaccine for the inoculation of troops; a trained Health Inspector



has been sent to visit and report upon the sanitary state of camps; and a considerable amount of pathological and bacteriological work has been carried out for the Base Hospital. The officers of the Department have at all times been available to advise and assist the military authorities, when called upon.

#### Vital Statistics.

The mean population of the year was computed to be 322,971. This figure is 1,224 less than the corresponding figure for 1914. There were, however, nearly 4,000 more females in the State than in 1914. The decline in the population is attributed entirely to the departure from the State of males on military service.

Owing to the same cause, the marriage-rate decreased from 8.2 per 1,000 of population to 7.9, and the birth-rate from 28.4 to 27.92. The death-rate was slightly below the average, and stood at 9.26, while the infantile mortality rate was 66.64. Dr. Atkinson calls attention to the fact that, with the exception of New Zealand, Western Australia had the lowest death-rate in Australasia, and probably in the world.

#### Medical Inspection of School Children.

It appears that the medical inspection of school children is part of the function of the Principal Medical Officer. While he recognizes that it is highly desirable that this inspection should embrace every child attending school in the State, he regrets to record that it had only been possible to organize the inspection to a very limited extent within the metropolitan district. He states that the question of the State usurping the function of treatment of physical defects brought to light by examination is one which must be approached with extreme caution. He regards an attempt to use hospitals indiscriminately as incompatible with expediency, and unjust, both to the hospitals, which are essentially charitable institutions, and to the members of the honorary staff, who give gratuitous services. He raises the question whether it would not be better for the State to provide adequate remuneration to local medical practitioners for the treatment of those who are unable to pay.

In the course of the year, 4,201 school children were examined. Of these, 2,801 showed some defect. Defective teeth and uncleanness were met with in 1,415, while the remaining 1,386 had some definite physical defect. This represents 33% of the total number of children examined. In 1,737 cases, the parents were notified that the condition required treatment. The advice was followed in 738 cases, or 42.4% of the total. In some districts the medical officer's advice was acted upon in every case, while in others it was ignored in 96% of the cases.

There were 653 instances of diseases of the skin, including 471 of pediculosis. Scabies was met with in 50 cases, and ringworm in seven. Defects of vision and diseases of the eye were discovered 1,244 times. There were 803 cases of astigmatism and 318 of myopia, while strabismus was seen in 30 cases. Of the pathological conditions, there were 44 cases of conjunctivitis, 15 of blepharitis and 13 of a granular condition of the eyelids, which may prove to be trachoma.

Defects of the nose and throat numbered 1,609. Enlarged tonsils were present in 590 cases, adenoid vegetations in 204 and enlarged lymphatic glands in 785. Dr. Atkinson is inclined to the opinion that a large number of the enlarged cervical glands are due to a tubercular infection. There were 74 instances of defects of the ear, including 54 of deafness and 15 of otorrhoea.

In 185 cases there was some disturbance of the cardiovascular system or of the blood. Ninety-nine of the children were anæmic. A definite lesion of the mitral valve was discovered 23 times.

There were 75 cases of bronchitis, two of asthma and two of deficient expansion of the lungs. Not one case of pulmonary tuberculosis was discovered among the 4,201 children examined. Dr. Atkinson suggests that this may signify that children suffering in this way were not attending school, or that the disease was not at all common amongst children of school age. Very few cases of defects of the nervous system were detected. There were five cases of infantile paralysis and nine of weak intellect.

Of the defects of the skeleton, there were 80 cases of scoliosis and 23 of kyphosis. In 25 cases tubercular disease

of bone or joint was suspected, and in 52 the deformity was attributed to a former attack of rickets.

Dental defects were numerous. Carious teeth were found 3,752 times. In 2,338, three, or less than three, teeth were affected, and in 1,019 four or more teeth were carious. The members of the Odontological Society have equipped and staffed a dental clinic at the headquarters of the Department. The work undertaken is given gratuitously, and the dentists have not asked for remuneration for their services. During the course of the year, 493 extractions were carried out and 383 fillings and other dental operations.

#### Maternity.

The Department undertakes the supervision of maternity nurses and midwives. During the course of the year there were 31 deaths of women during the puerperal period. As there were 9,018 births, the puerperal mortality works out at 0.343%. In 1914 it was 0.456%. Of the 31 deaths, four were due to puerperal septicæmia. The total number of cases notified was nine. In 1914 there were 19 cases, with 11 deaths. It appears that a considerable amount of ignorance exists among unqualified midwives, and the cases of negligence and incompetence are not infrequent. The Commissioner either deals with these cases himself, or refers them to the Midwives' Board. At the end of 1915 1,095 midwives were registered under the provisions of the Act. Of these, 244 were holders of qualifying certificates. The remaining 851 were untrained women, who had been in practice prior to June 1, 1909. Since May 31, 1913, no further untrained women could be registered. It is therefore but a matter of time before all the midwives registered in the State will have passed through a prescribed period of training. The supervision is carried out by visiting nurses. Dr. Atkinson speaks well of the way in which the departmental nurses have carried out their duties. He claims that the control of lying-in homes should be transferred from the State Children Department to the Public Health Department. Both Departments are in accord with this transference, and Dr. Atkinson expresses the hope that the Health Act will be amended for this purpose within a short time.

#### Laboratory Work.

During the course of 1915 Dr. Shearman, the Government Bacteriologist and Pathologist, obtained leave of absence to serve in the Royal Army Medical Corps at a General Hospital in Alexandria. Notwithstanding the handicap brought about by his absence from June onwards, a very large amount of work has been carried out. The work included the usual diagnosis of diphtheria, enteric fever and other diseases, the performance of the Wassermann test, the examination of pathological conditions, the bacteriological examination of water, the medico-legal investigation in connexion with criminal cases, and the preparation of vaccines.

Much interest was taken in the scientific elucidation of cases of cerebro-spinal meningitis. One of the cases which have been reported in this journal, is reprinted in the Report. Some interesting work in connexion with the Arneith index is also recorded. The Government Analyst discovered arsenious oxide to the extent of seven grains per gallon, which is approximately one part in 10,000 in the water of streams to which cattle, horses and dogs have had access. The arsenic had been included in the waste liquid from the powellizing plant at the State Sawmills. At Pemberton the washings from the timber stage contained 16.8 grains of arsenic per gallon (0.242 grammes per litre); sludge in the neighbourhood gave 2.28% of arsenic, and water from the main stream contained 0.01 grain per gallon (0.14 mgr. per litre). Various methods were adopted to obviate the danger of contaminating streams, but apparently with little success.

#### Sanitation.

The responsibility of safeguarding the public health is vested in the Commissioner for those portions of the State which are not situated within the jurisdiction of a local authority. It has been the policy of the Department to establish a sanitary service in these areas, where it can be maintained at a reasonable cost. During the year, services were inaugurated in three districts, while services were taken over from a private company in three others. At the close of the year the Department had in operation sanitary services in 33 village areas. The expenditure



amounted to £232, and the revenue collected by the contractor to £355.

The Department has also control of the sanitary services in Government buildings. These services are maintained at a cost of £7,626. A short paragraph is appended, dealing with the control of public buildings.

#### Food Control.

Private slaughtering in the metropolitan area has been done away with, and public abattoirs have been established in Kalgoorlie and Boulder Town. The Commissioner advocates the extension of this arrangement to smaller towns, and suggests that the municipalities of several of them should undertake to establish their own public abattoirs.

The Commissioner points out that Western Australia was the first State to adopt new regulations under the "Food and Drugs Act," based on the recommendations of the conference held in Melbourne in 1913. The regulations were gazetted in 1914. During the year 1915 much work was done with the object of educating traders and others concerning the necessity of conforming with these regulations, in the public interest. During the year 758 samples were taken by local inspectors, 243 by officers of the Health Department, and 347 for the purposes of carrying out special tests. Of the 243 samples, only 39 were of milk. In 17 instances self-raising flour was found to be below standard. Sixteen samples of cordials, 10 samples of lemon squash, 3 samples of malt and oil, 3 of lime juice, 2 samples of essence, and one sample each of pickles, sauce, coffee and chicory extract, cream of tartar, baking powder and vinegar were also not in conformity with the requirements. A prosecution was successfully conducted in regard to one patent medicine, while radical alteration in the advertising matter was insisted on in another. In 42 cases fines were imposed, which, together with the costs, amounted to £120. This sum is equivalent to an average of £2 17s. 0½d. per offender. During the course of the year 275,284 sheep, 39,385 cattle, 21,501 pigs and 1,929 calves were slaughtered under the supervision of the meat inspectors. The total number of carcasses condemned was 465. The cause for the condemnation was putrefaction in 151 cases, tuberculosis in 118, traumatism in 67, emaciation in 27, inflammation in 22, sepsis in 20, gangrene in 16, pyæmia in 3, and so forth. In 1,140, parts of the carcasses were condemned. The pathological conditions discovered included tuberculosis, actinomycosis, abscess, necrosis, putrefaction, etc.

Canned fresh herrings were examined for metallic contamination, and in four cases tin to the extent of from 286 to 358 mgrs. per kilogram was discovered. Deficiency in weight of loaves of bread was detected in 27 instances. In 11 cases complaints were laid, and fines amounting to £29 10s., with £9 5s. costs, were imposed.

The total number of samples of milk analysed by the Chief Inspector was 1,269, representing 17,435 milkings of 2,369 individual cows. The Inspector records the average contents of fats, solids other than fats, and total solids for the morning and afternoon milking, and states that on this basis an alteration has been adopted in the standard, raising the quantity of butter fats from 3% to 3.2%, while solids other than fats remained at 8.5%. He neglects to give the maximum and minimum quantities found by analysis. We have called attention in the past to the objection to establishing a standard for milk in conformity with an average without taking into consideration the variations from that average which occur under physiological conditions.

Dr. Atkinson quotes figures supplied by the Government Statistician concerning the consumption of alcoholic beverages throughout the State. The consumption per individual of wine was decreased from 4.75 litres (1.06 gallons) to 3.75 litres (0.83 gallon) from 1914 to 1915. The reduction in the consumption of spirits was even greater, being from 5 litres (1.13 gallons) to 3.82 litres (0.85 gallon). That of beer was reduced from 82.38 litres to 78.39 litres (18.53 to 17.42 gallons).

### Vital Statistics.

#### TASMANIA.

In the Report of the Government Statistician on the vital statistics of Tasmania for the month of August, 1917, the number of births registered in the Hobart and Launceston

district is given at 216. Of these, 140 were registered in Hobart and 76 in Launceston. The birth-rates expressed as annual rates were 42.36 per 1000 of population for Hobart, 37.08 for Launceston, or 40.12 for the urban districts.

The deaths in the urban districts numbered 87. This number is lower than the average number for the corresponding month in the preceding five years. The death-rate for Hobart was equivalent to an annual rate of 15.62 per 1000 of population, while that of Launceston was equivalent to an annual rate of 17.04. The urban rate stood at 16.32. There were nine deaths of children under one year of age, seven of which took place in Hobart, and two in Launceston. The infantile mortality was 41.6 per 1000 births for the two cities. It was 50 for Hobart.

There were 13 deaths due to diseases of the cardiovascular system, nine in the Hobart district, and four in the Launceston district. There were five fatal cases of tuberculosis, including four in Launceston. There was one case of enteric fever in the Hobart district, one case of diphtheria in the Hobart district, and two in the Launceston district, and one case of cerebro-spinal meningitis in the Hobart district. Acute bronchitis and pneumonia accounted for three of the Hobart deaths, and diarrhoea and enteritis one. The last named disease caused one death in Launceston. There were five deaths from cancer in Hobart and four in Launceston.

The number of births registered in the country districts was 342. The birth-rate expressed as an annual rate was 30.24 per 1000 of population. It was 27.6 in August, 1916, and 27.24 in 1915.

There were 91 deaths, which corresponds to an annual death-rate of 8.04. In August, 1916, the death-rate was equivalent to an annual rate of 9.12, and in August, 1915, it was equivalent to a rate of 7.44.

In regard to the causes of death it appears that diphtheria was fatal on four occasions, influenza on three and pulmonary tuberculosis on one. There were four deaths from cancer.

### Correspondence.

#### BARCOO ROT AND SPEW.

Sir,—I have seen many cases of bushmen with "Barcoo rot," coming down from the Barcoo district, and I have always thought it was a fly infection. The patients are invariably men, and always give the same history; they have an abrasion on their hands; this is attacked by flies and the flies biting other parts of their hands and arms, inoculate fresh lesions. I agree with the bushmen themselves that it is a fly-born disease, and if the parts are covered up, no fresh trouble occurs. I have never thought any internal remedy was of the least use, but a local mercurial application, such as Hutchinson's cream, and a clean linen bandage will always bring about a rapid cure. I have sent the cream to dozens of men in the Barcoo country and always with the happiest results.

Barcoo spew is also probably due to flies, the bushmen tell me the sugar is always a seething black mass of flies, depositing their faeces all over the surface of the sugar. The men consume the sugar in large quantities and almost at once have to go outside the hut and vomit, and are then able to return and start their meal all over again. Nearly all the old bush hands I have spoken to on the subject, put the trouble down to the faecal poisoning of the sugar. The patients are always well long before they get down to the larger cities and away from the fly-poisoned sugar.

Yours, etc.,

R. HUMPHREY MARTEN, M.D., Cantab.

November 5th, 1917.

### Books Received.

THE JEWISH CHILD, ITS HISTORY, FOLKLORE, BIOLOGY AND SOCIOLOGY, by W. M. Feldman, M.B., B.S., with an Introduction by Sir James Crichton Browne, M.D., D.Sc., LL.D., F.R.S.; 1917. London: Baillière, Tindall & Cox, Demy 8vo., pp. 453, with 2 plates and 19 illustrations. Price, 10s. 6d. net.

THE PRINCIPLES OF RATIONAL EDUCATION, by Charles A. Mercier, M.D., F.R.O.P., F.R.C.S.; 1917. London: The Mental Culture Enterprise. Crown 8vo., pp. 87. Price, 2s. 9d. net.

AMBULANCE DE "L'OCEAN" LA PANNE, Travaux publiés sous la Direction du Dr. A. Depage; 1917. Paris: Masson et Cie. Royal 8vo., pp. 363. Annual Subscription for two volumes, 30 fr. THE KING'S FISHING, Done into verse by Charles Mercier, M.C.C.; 1917. London: The Mental Culture Enterprise. Crown 8vo., pp. 50. Price, 1s. 3d. net.

## Proceedings of the Australasian Medical Boards.

### QUEENSLAND.

The following have been registered under the provisions of the "Medical Act of 1867" as duly qualified medical practitioners:—

Cuthbert, Harold William, Bundaberg, M.B., Univ. Sydney, 1917.

Foy, Donovan Sylvester, Toowoomba Hospital, M.B., Ch.M., Univ. Sydney, 1916.

### Medical Appointments.

Dr. John Brooke Moore (B.M.A.) has been appointed as successor to the late Dr. W. F. P. Bassett to the position of Government Medical Officer at Bathurst, New South Wales.

For the purposes of the Factories and Shops Acts, Dr. G. R. Plante (B.M.A.) has been appointed Certifying Medical Practitioner at Fitzroy, Victoria.

Dr. Guthrie Raynes Plante (B.M.A.) and Dr. Hugh Lathrop Murray (B.M.A.) have been appointed Public Vaccinators for the Metropolitan District, and Dr. John Pollock (B.M.A.) Public Vaccinator for the Midland District, Victoria.

The appointment of Dr. Alexander Tennant Chapple (B.M.A.) as Second Government Medical Officer and Vaccinator, New South Wales, is announced in the *New South Wales Government Gazette* of November 9, 1917.

Dr. Ettie Lyons (B.M.A.) has been appointed Government Medical Officer at Taralga, New South Wales.

The resignation of Dr. Charles Herbert Clatworthy (B.M.A.) as Medical Referee under "The Workers Compensation Act Amendment Act of 1916" for the whole of the State of Queensland has been accepted.

### Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xv.

Gin Gin Hospital, Medical Officer.

### Medical Appointments.

#### IMPORTANT NOTICE.

Medical practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429 Strand, London, W.C.

Branch.	APPOINTMENTS.
<b>TASMANIA.</b>	
(Hon. Sec., Belgrave, Tasmania.)	Medical Officers in all State-aided Hospitals in Tasmania.
<b>VICTORIA.</b>	
(Hon. Sec., Medical Society "Hall, East Melbourne.)	Brunswick Medical Institute. Bendigo Medical Institute. Prahran United F.S. Dispensary. Australian Prudential Association Proprietary, Limited. National Provident Association. Life Insurance Company of Australia, Limited. Mutual National Provident Club.

Branch.	APPOINTMENTS.
<b>QUEENSLAND.</b>	
(Hon. Sec., B.M.A. Building, Adelaide Street, Brisbane.)	Medical Officers to the Selwyn Hospital, North Queensland. Brisbane United Friendly Society Institute.
<b>SOUTH AUSTRALIA.</b>	
(Hon. Sec., 3 North Terrace, Adelaide.)	The F.S. Medical Assoc., Incorp., Adelaide.
<b>WESTERN AUSTRALIA.</b>	
(Hon. Sec., Health Department, Perth.)	All Contract Practice Appointments in Western Australia.
<b>NEW SOUTH WALES.</b>	
(Hon. Sec., 30-34 Elizabeth Street, Sydney.)	Australian Natives' Association. Balmain United F.S. Dispensary. Canterbury United F.S. Dispensary. Leichhardt and Petersham Dispensary. M.U. Oddfellows' Med. Inst., Elizabeth Street, Sydney. Marrickville United F.S. Dispensary. N.S.W. Ambulance Association and Transport Brigade. North Sydney United F.S. People's Prudential Benefit Society. Phoenix Mutual Provident Society. F.S. Lodges at Casino. F.S. Lodges at Lithgow. F.S. Lodges at Parramatta, Penrith, Auburn and Lidcombe. Newcastle Collieries — Killingworth, Seaham Nos. 1 and 2, West Wallsend.
<b>NEW ZEALAND: WELLINGTON DIVISION.</b>	
(Hon. Sec., Wellington.)	Friendly Society Lodges, Wellington, N.Z.

### Diary for the Month.

- Nov. 20.—N.S.W. Branch, B.M.A., Executive and Finance Committee.  
 Nov. 21.—W. Aust. Branch, B.M.A., Branch.  
 Nov. 21.—Western Suburbs Med. Assoc. (N.S.W.).  
 Nov. 23.—Q. Branch, B.M.A., Council.  
 Nov. 27.—N.S.W. Branch, B.M.A., Medical Politics Committee; Organization and Science Committee.  
 Nov. 27.—Vict. Branch, B.M.A., Ballot Papers for Election of Members of Council Issued.  
 Nov. 28.—Vict. Branch, B.M.A., Council.  
 Nov. 29.—S. Aust. Branch, B.M.A., Branch.  
 Nov. 30.—N.S.W. Branch, B.M.A., Branch.  
 Dec. 4.—N.S.W. Branch, B.M.A., Ethics Committee.  
 Dec. 4.—Vict. Branch, B.M.A., Ballot Papers for Election of Member of Council Returned.  
 Dec. 5.—Vict. Branch, B.M.A., Annual Meeting.  
 Dec. 7.—Q. Branch, B.M.A., Annual Meeting.  
 Dec. 11.—Tas. Branch, B.M.A., Council and Branch.  
 Dec. 11.—N.S.W. Branch, B.M.A., Executive and Finance Committee.

### EDITORIAL NOTICES.

Manuscripts forwarded to the office of this Journal cannot under any circumstances be returned.  
 Original articles forwarded for publication are understood to be offered to *The Medical Journal of Australia* alone, unless the contrary be stated.  
 All communications should be addressed to "The Editor," *The Medical Journal of Australia*, B.M.A. Building, 30-34 Elizabeth Street, Sydney, New South Wales.